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REPORT

# DRIVERS OF DATA FOR DEVELOPMENT

## EXPLORING THE FACTORS THAT ENABLE AVAILABILITY AND UTILITY OF OPEN DATA FOR DEVELOPMENT IN AFRICA

May 2020

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LDRI

local development
research institute

**We are an action oriented think tank that supports efforts of African countries to end hunger, extreme poverty and reduce inequality.**

Our works examines the state of evidence used for decision making including the state of the institutions producing, the evidence and those relying on that evidence in order to deliver on their mandates.

We have expertise and experience in public policy, open data, data science, artificial intelligence and capacity building of public sector institutions and actors.



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# INTRODUCTION

The term development broadly refers to the entire spectrum of aspects that advance the quality of human life. These include health, education, trade and employment, equality, environment and natural resource allocation and sustainability, social and political stability, among numerous other sub-themes. These could be summed up as all economic and non-economic spheres i.e social-economic development.

## DEVELOPMENT DATA

The World Bank defines development data as the data produced by country systems (e.g. national statistical offices, government line ministries and agencies) or other parties on a country's social, economic and environmental issues. These include, but are not limited to, data sourced from census, household surveys, agricultural surveys, civil registration and vital statistics and administrative systems. The term also encompasses additional forms of data (big, open, citizen-generated and real-time digital data). There are therefore different sources and types of data which often take various formats and which could be used to inform development interventions.

Data use in development work is not new. For instance data has been applied in project evaluations in form of monitoring and evaluation as well as in designing project interventions e.g. the number of bed nets to be distributed, population etc. In the recent past, the transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) has brought about a re-awakening on the centrality of data as driver of development[1]. This is especially

[1]Open Data and Open Science for SDGs https://sustainabledevelopment.un.org/content/documents/14721Open_Data_and_Open_Science_for_SDGs.pdf

significant for monitoring, measuring and reporting on the SDG targets and indicators[2] and enabling more data driven decision-making in alignment with the 2030 Agenda.

More recently, discourse on the use of data for development has framed its use as a foundation for meaningful policy making and implementation, efficient resource allocation, inclusion, service delivery[3] and an effective means of implementation for development frameworks and strategies. Further, the world is now faced with the Fourth Industrial Revolution (4IR), for which data is central to and which holds the potential to unlock opportunities for socio-economic development in Africa. It also presents stakeholders with an opportunity to harness converging technologies for a more inclusive and human centred future[4]. The 4IR is characterized by the fusion of the digital, biological, and physical worlds, and the growing utilization of new technologies such as artificial intelligence, cloud computing, robotics, among others[5]. The availability and use of data is central to the key pillars of the 4IR and their abilities to deliver for the African development agenda. Creating an enabling environment for the publication and use of data for development is therefore critical to moving the needle on inclusive and sustainable socio-economic development outcomes in Africa.

Over the years, rapid advancements in digital technologies and innovations have led to new formats of data such as open and big data. This is as a result of enhanced data production and management processes and ultimately more dynamic availability and accessibility options for the potential users of data. New data formats provide governments and other non-state actors with a chance to identify new opportunities, increase the use of data that is made available and potentially implement more targeted and more informed interventions.

Despite the aforementioned advancements, there exists gaps in the required expertise and speed to respond effectively and efficiently to development challenges especially within governments who tend to be to, more often than not, drive these agendas in their respective countries. Data, if well harnessed and used, can help close these gaps by enabling more accuracy on assessments of the challenges, evidence-based policy and institutional design and by creating

[2]Open Data in a Big Data World: challenges and opportunities for sustainable development https://sustainabledevelopment.un.org/content/documents/95519_Ebikeme%20et%20al.__Open%20Data%20in%20a%20Big%20Data%20World__challenges%20and%20opportunities%20for%20sustainable%20development.pdf
[3]Data for development impact: Why we need to invest in data, people and ideas https://blogs.worldbank.org/voices/data-for-development-impact-why-we-need-to-invest-in-data-people-and-ideas
[4]Fourth Industrial Revolution https://www.weforum.org/focus/fourth-industrial-revolution
[5]Foresight Africa: Top Priorities for the Continent 2020-2030 https://www.brookings.edu/multi-chapter-report/foresight-africa-top-priorities-for-the-continent-in-2020/



new knowledge sources. Data for development (D4D) has the potential to accelerate impact, help to mobilize funding and resources and more importantly mobilize citizens to participate.

There is an acknowledgement by governments and stakeholders across the African continent of the importance of data in tackling development challenges. The proliferation of more accessible technology and innovations that enable easier application of data have also created new opportunities for better publication and use of data for development. However, there is little evidence to show that data is being used optimally in informing African countries' development agenda.

If the data available is well disaggregated, in easily accessible (formats, infrastructure) and timely, it has the ability to be used for multiple purposes at scale[6]. For this to effectively happen, stakeholders need to collaboratively work to create an enabling environment and address challenges that contribute to the current dearth of data.

## OPEN DATA FOR DEVELOPMENT

Open data became a global phenomenon slightly over a decade ago and over the years has been adopted around the world by different stakeholders, even on the African continent. It refers to data that can be accessed, used, re-used, re-purposed and redistributed by anyone subject only, at most, to the requirement to attribute and share-alike[7]. The use of open data has been championed as holding potential for strengthening government transparency, accountability and responsiveness, spurring social and business innovation and fostering inclusivity and empowerment. Additionally, established open data principles go beyond technical aspects to make its link with socio-economic development outcomes on inclusivity, empowerment, improved governance and citizen engagement. As such, the successful use of open data for development relies on combining the technical aspects of open data such as formats and licensing with the exploration of how the publication of open data contributes to socio-economic development in different contexts.

The last ten years saw a huge momentum on open data both globally and in Africa with several national, sub-national and sector-specific open data initiatives being launched. This has however slowed down in recent years due to multiple challenges such as lack of financing, unclear

[6]Development of the National Statistical System Project. World Bank Report 110966, 2016. http://documents.worldbank.org/curated/en/392961483550872859/text/110966-PPAR-P085414-PUBLIC.txt
[7]Data for development: What's next? Concepts, trends and recommendations for German development cooperation http://webfoundation.org/docs/2018/01/Final_Data-for-development_Whats-next_Studie_EN.pdf

institutional structures, low demand among other things. To continue the momentum not only on the publication but also use of open data, governments and other stakeholders need to come together to address these bottlenecks in order to reap maximum benefits in the use of open data for development.

It is on this backdrop that this research sought to surface evidence to support advocacy for domestic resource mobilization for data initiatives and contribute to progress on sustainable and development-aligned data initiatives in Africa.

## DEFINITION OF TERMS

Data for development, as used in this report, is conceptualized as the use of data to support socio-economic development interventions which include, policy making, decision making, investment, community engagement, equality, innovation among others.

Open data for development as used in this report, is conceptualized as the use of data available for use, reuse, re-purposing and redistribution by anyone to support socio-economic development interventions.

| PRINCIPLE | DESCRIPTION |
|---|---|
| Open by default | Data being available to everyone while taking into account privacy considerations |
| Timely and comprehensive | Making relevant data available and in its unmodified form |
| Accessible and Usable | Making data available in machine readable formats and making it available under open licenses |
| Comparable and Interoperable | Having consistent data standards such that datasets can be compared and pattern drawn between them |
| For Improved Governance and Citizen Engagement | Increasing government transparency and helping citizen's hold governments to account |
| For Inclusive Development and Innovation | Using open data to improve government performance and drive innovation by both government and non-state actors |

Table 1: Open data Principles. Adapted from the Open Data Charter[8]

## JUSTIFICATION/SCOPE

This publication aims to map out the data for development ecosystem in Africa to understand who the stakeholders are, the enabling factors, the legislative environment, perceived and actual benefits and constraints in the use of open data for development. Based on an understanding of the ecosystem, it aims to surface evidence on what it takes to create an enabling environment for the implementation of successful, adequately resourced open data for development initiatives that catalyse evidence based, inclusive and sustainable development outcomes.

Through analyzing literature and capturing the experiences of providers and users of open data we attempt to go beyond the debates on data and data openness in their technical sense to explore the nexus between open data and sustainable development in Africa. The report proposes that to understand the link between open data and development we have to look at the two together as opposed to as two as different concepts. It therefore presents, using case studies, the current state of the data for development ecosystem and provides recommendations on what it would take to make the use of open data for development work in Africa.

## LIMITATIONS OF THE STUDY

This publication does not set out to provide causal relationships between open data and other variables as guaranteed solutions for addressing the existing gaps in the use of open)data for development. Instead, it provides suggestions for areas that can be addressed to help create an enabling environment for the publication and use of open data for development in Africa. As such, additional contextual research around the recommendations provided may be required to determine best fit contextual solutions.

[8]Open Data Charter https://opendatacharter.net/

This report proposes that to understand the link between open data and development we have to look at the two together as opposed to as two as different concepts.

# METHODOLOGY

This report aims to map out the data for development ecosystem; stakeholders, legislative environment, perceived and actual benefits and constraints in Africa. It further zeroes in on the use of open data for development and whether it presents any additional benefits or challenges. The study ran from July to December 2019. To fully understand these areas this report employed multiple methodologies.

## LITERATURE REVIEW

Researchers[9] reviewed existing literature on data for development, and open data for development specifically, to understand the data for development landscape. The review captured information on stakeholders, relationships, frameworks, processes, capacities, policies, infrastructure, enabling factors, benefits and constraints in Africa and in Kenya, Ethiopia, Rwanda and Sierra Leone. Reviewed literature included research papers, policy briefs, laws and regulatory frameworks, media reports, web and blog posts and case studies of ongoing and past interventions. In addition, other reports on data for development from other contexts were analysed.

## EXPERT/STAKEHOLDER VALIDATION WORKSHOP

A validation workshop was held in Nairobi to validate the initial findings of the literature review. The workshop brought together 14 stakeholders from government, media, development partners, private sector, CSOs and researchers working on and with open data for development. It explored open data for development stakeholders in Africa and in Kenya, drivers of success in the use of data for development. It also provided a basis for verification and validation of chal-

[9]The research was conducted by the fellows under the inaugural Africa Open Data Fellowship providing technical assistance to government Ministries, Departments and Agencies in Ethiopia, Kenya, Rwanda and Sierra Leone

lenges and opportunities in human capital, financing, infrastructure and enabling environment as drivers of success for open data for development initiatives. The workshop further explored the stakeholders' perspectives on challenges in using or producing data and identifying areas of potential synergies and opportunities for collaboration across different stakeholder groups.

## KEY INFORMANT INTERVIEWS

With a view to further understand the open data for development ecosystems, researchers identified and interviewed key stakeholders working on open data for development in the four countries as well as across the African continent. Semi-structured interviews were administered to allow the researchers to explore participants' perspectives in detail. A total of 18 interviews were conducted, transcribed[10], analysed, synthesized and are discussed in Chapters three and four of this report.

## COUNTRY BASED CASE STUDIES

The report uses four 4 case studies, from Ethiopia, Kenya, Rwanda and Sierra Leone. They provide a nuanced understanding of the implementation of open data for development initiatives in different contexts. They offer an in-depth understanding of D4D and OD4D ecosystems in Africa and evidence on what it takes to create an enabling environment for the implementation of successful, adequately resourced data for development initiatives, that can ultimately catalyse evidence based, and inclusive development outcomes.

[10]Interview Transcripts-Drivers of Data for Development in Africa Report. http://researchdata.developlocal.org/content/drivers-data-development-africa-report



# DATA FOR DEVELOPMENT IN AFRICA

Use of data to influence development in Africa is not a new idea, data for development has been vital in the areas of monitoring and evaluation. That said, the use of data across all aspects of socio-economic development was not always mainstream.

However, momentum on this has been building at the continental level with recent discourse being framed around the idea of the data revolution. The data revolution is conceptualized as using existing and new sources of data to fully integrate statistics into decision making and promote open access to, and use of, data[11]. This has resulted in the championing and use of different data types and sources such as Civil Registration and Vital Statistics (CRVS), administrative data, big data and open data among others to address different socio-economic needs on the continent. Similarly, expansions and advancements in the data universe have created new opportunities such as Artificial Intelligence that present new ways of collecting, analysing and using data that present unprecedented opportunities for greater social impact.

On the policy front, there have been consistent and coordinated efforts to guide the publication and use of data to inform development in Africa. These efforts have resulted in the establishment of continental frameworks on data and statistics. Two frameworks provide grounding guidelines on this: The African Charter on Statistics[12] and The Strategy for the Harmonization of Statistics in Africa (SHaSA)[13]. The African Charter on Statistics was adopted by African Union Heads of State and Government in February 2009. The charter provides a set of principles that guide institutional environments, collection, processing, publication and use of data and statistics. Secondly, the Strategy for the Harmonization of Statistics in Africa (SHaSA) was also adopted in July, 2009. SHaSA provides strategies for the harmonization of statistics and statis-

[11]High Level Panel on the Post 2020 Agenda Report, p 23 https://www.post2020hlp.org/the-report/
[12]African Charter on Statistics https://au.int/sites/default/files/treaties/36412-treaty-0037_-_african_charter_on_statistics_e.pdf
[13]Strategy for the Harmonization of Statistics in Africa https://au.int/en/ea/statistics/shasa

The African Union Headquarters in Addis Ababa, Ethiopia.

tical processes and is a response to challenges related to African integration and the African development Agenda as envisioned in the AU's Agenda 2063. Development partners such the International Monetary Fund (IMF) have also provided additional guidelines and strategies responding to different parts of the data ecosystem which also support countries in their publication and use of data for development such as the General Data Dissemination System[14]. These guidelines and strategies provided by non-state actors include thematic guidelines on thematic areas such as health and in some cases are specific to different communities of practice within the data ecosystem such as those working on big data.

Further, the existence of mechanisms for review such as the Africa Peer Review Mechanism (APRM) and the Open Government Partnership (OGP) provide an avenue for countries to monitor progress on different thematic issues and factor in adjustments related to data use to improve outcomes. Countries such as Sierra Leone and Kenya for instance, which are members of the OGP a voluntary initiative to make governments open, accountable and responsive to citizens, have used it to make commitments to publish government data. This has resulted in better outcomes in areas such as public contracting[15].

The existence of these cross-cutting charters, strategies, guidelines and review mechanisms provide a superstructure that gives a framework for different countries to work within. Different countries then adopt policies and laws that help operationalize these instruments and commitments. Country specific data ecosystems therefore take different context-relevant approaches in the collection, processing, publication and use of data for development.

### Open Data in Africa

Morocco became the first country to launch a national open data initiative in April 2011 with Kenya following soon after with the first national open data initiative in Sub-Saharan Africa in June 2011. In the subsequent years other national and sub-national open data initiatives have been implemented. Other stakeholders such as CSOs have also rolled out multiple open data initiatives to support different issues across the development spectrum such as agriculture, extractives, public contracting among others. Multiple players have taken on different roles such as funding, advocacy, training to support the implementation of open data initiatives across the continent.

At the beginning, dialogues on open data focused more on technical standards, technology innovation and publication. This has however evolved over the years to include dialogues on the use of the data to drive development outcomes. Initiatives on the continent have also evolved over the years with various stakeholders working on stimulating the demand for and use of published open datasets.

## BENEFITS OF OPEN DATA FOR DEVELOPMENT

The use of data for development holds great promise in addressing a myriad of socio-economic development challenges in African. This promise manifests itself in areas such as evidence informed decision making, better service delivery, spurring innovation, enabling research by deepening insights into a range of issues, informing resource allocation and management,

[14]General Data Dissemination System https://www.imf.org/external/pubs/ft/gdds/guide/2013/gddsguide13.pdf

[15]Open Government Partnership- Kenya https://www.opengovpartnership.org/members/sierra-leone/commitments/SL0021/

unlocking economic value through making operations more effective, creation of new products, new business opportunities and services, market segmentation[16].

Open data provides additional benefits that include; greater transparency and accountability since more individuals are able to access the data, increasing visibility of data thereby stimulating better uptake, getting better value for published data since multiple actors can interrogate and use it in different ways, reducing the payload on other stakeholders, reducing duplication of data collection efforts consequently lowering the costs of data collection in the ecosystem and enabling advocacy, community engagement and mobilization. Closed data limits the determination and implementation of development initiatives to the institutions that produce and hold the data. Opening up data enables other actors to use it as well and for them to play a bigger role in implementing development initiatives which is important for a society's transformation.

While there are many benefits of open data use for development, it is important to acknowledge that there is value in all data, commercial or otherwise, and that the true benefits of data can only be determined at the point of use. Making data available therefore makes it possible for users to implement initiatives within already established domains of usefulness but to also experiment with potential new domains.

## OPEN DATA FOR DEVELOPMENT STAKEHOLDERS

There are a number of multi-sectoral stakeholders in the open data for the development ecosystem. Different stakeholders play different roles in the open data for development life cycle. These stakeholders can be broadly categorized as producers, data users, funders and infomediaries. Stakeholders may however take on one or more roles with most stakeholders taking on all four roles at different points in the cycle as they collaborate and complement each other's work in different ways.

There are differences in the way stakeholders interact with each other in existing models of broad data ecosystems versus in open data ecosystems.

### Data Ecosystem

In models for data ecosystems, statistics units are at the centre of the ecosystems and all other stakeholders operate around them. At the continental level, the African Union Statistics Division coordinates the African Statistical System. In partnership with other stakeholders, government or otherwise, it works to improve the production of high quality and harmonized statistics and to undertake capacity building in both AU Member States and Regional Economic Communities (RECS)[17]. At the national government level, National Statistics Offices (NSOs) are at the centre of the ecosystem and set the agenda for the national statistics system. Data generation and efforts such as financing are seen as being complementary to what the NSOs do.

For open data on the other hand, the model in Figure 1 by Rahemtulla et al. paints a picture of what the reality is across African countries. While the model may be outdated with citizens now featuring prominently as data users and producers[18] and the position of the World Bank now including many other development partners, the premise of the model still holds true. Discourse on and the implementation of projects and interventions on the publication and use of open data have been largely championed and supported by CSOs and development partners and in some scenarios the private sector. Efforts for publication and use of open data within governments and the larger data ecosystem have been led by individual champions who believe in open data's potential. It is important to note that most of these efforts have either not involved the NSOs and where they have, they have been peripherally involved.

### Open Data Ecosystem

Current stakeholders on Data for development include Development Partners who include multilateral organizations and donors, Government Ministries Departments and Agencies both national and sub-national, CSOs, researchers and research institutions, academia and private sector. Examples of some stakeholders who have been supporting data for development work in Africa include: US Agency for International Development (USAID), World Bank, United Nations Economic Commission for Africa (UNECA), The African Development Bank (AFDB), The Rockefeller Foundation, the Bill and Melinda Gates Foundation, Department for International Development (DFID), Swedish International Development Cooperation Agency (SIDA), Regional Strategic Analysis and Knowledge Support System (ReSAKSS), the Global Partnership for Sustainable Development Data (GPSDD), International Livestock Research Institute (ILRI), UN Tech-

[16]Open data: Unlocking innovation and performance with liquid information https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information

[17]About the African Peer Review Mechanism https://www.aprm-au.org/page-about/

[18]State of Open Data, Sub-Saharan Africa https://stateofopendata.od4d.net/chapters/regions/sub-saharan-africa.html#fnref:25

nology Innovation Labs, Smart Africa Secretariat a panafrican initiative on digitalization among others.

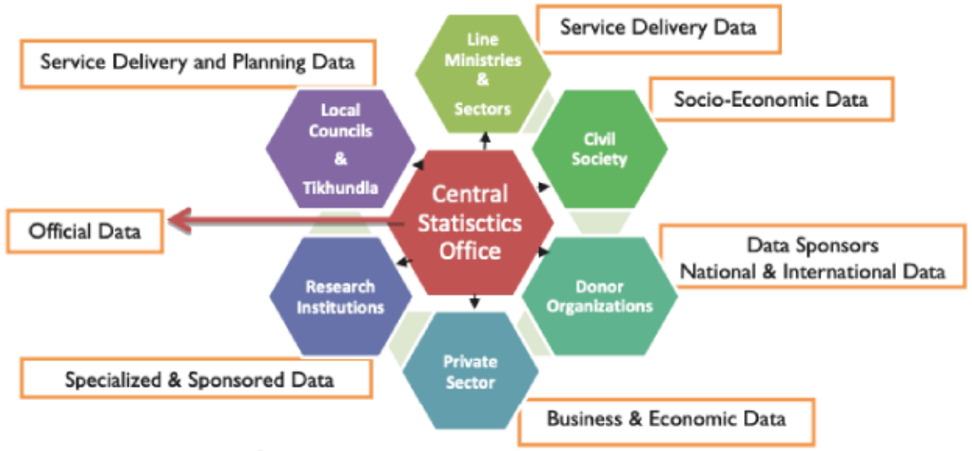


Figure 1: Data Ecosystem Map. Adapted from Hlatshwayo, 2016[19]

Additionally, there are actors who have been instrumental in supporting the use of open data for development in Africa such as the Open Knowledge Foundation, Open Data Institute (ODI), the World Wide Web Foundation, the International Development Research Centre (IDRC), Hewlett Foundation, The Africa Open Data Network (AODN), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Communauté Afrique Francophone pour les Données Ouvertes (CAFDO) among others. Additionally, there are actors supporting the use of open data for development within specific sectors such as HIVOS on open contracting; Extractive Industries Transparency Initiative; Global Open Data for Agriculture and Nutrition (GODAN) on agriculture; and African Open Science Platform among others.

There are, however, a few stakeholders who participants in the study identified as currently not actively being involved in discourse on open data for development in Africa but whose involvement would further consolidate the OD4D agenda in Africa. Institutions such as the African Union, Regional Economic Communities such as Economic Community of West African States (ECOWAS), Southern African Development Community (SADC) and the East African Community (EAC). The place of the African Union and regional blocks in conceptualizing a shared open data agenda cannot be overstated. A shared vision would help shape sustained country efforts and cross country peer learning efforts for better development outcomes. At the national level, key

[19]Swaziland Data Ecosystem Mapping Report https://www.undp.org/content/dam/2030agenda/Publications/data-for-development/Swaziland%20-%20Data%20Ecosystems%20Mapping%20Report_Final_Dr.%20Godwin%20Hlatshwayo%20(05.31.16).pdf



stakeholders who could play a more pronounced role include National Statistics Offices, development partners implementing socio-economic development initiatives in Africa but who do not have clear policies that allow for data sharing externally and media houses with a presence in multiple African countries.

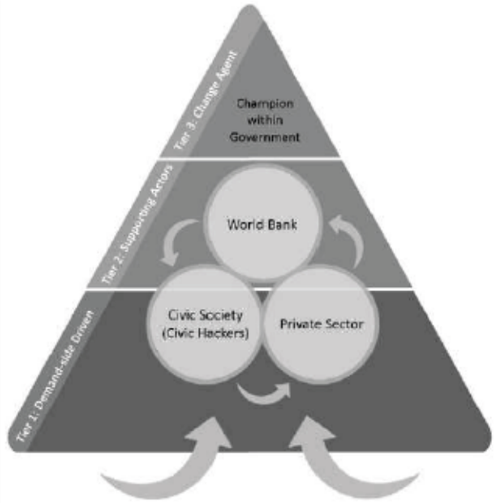


Figure 2: Kenya open data ecosystem as conceptualized by Rahemtulla et al. (2012)[20]

## DRIVERS OF OPEN DATA FOR DEVELOPMENT

There are multiple enablers that have and continue to create a conducive environment for stakeholders to implement D4D initiatives. These are:

### Existence of enabling legal, legislative, policy frameworks and continental frameworks

These include the African Charter on Statistics and the Strategy for the Harmonization of Statistics in Africa (SHaSA). These frameworks make it easy for advocates to hold governments accountable for their commitments on D4D, to commit resources to, implement D4D initiatives, and to adopt policy frameworks that create an enabling environment for the implementation of D4D. Additionally, the existence of model laws, regulations and policies developed by non-state actors on different aspects of publication and use of open data have helped provide countries with a starting point for conceptualizing laws, policies and regulations. These model

[20]Open Data Kenya: Case study of the underlying drivers, principal objectives and evolution of one of the first open data initiatives in Africa. Washington, DC: Open Development Technology Alliance. https://www.scribd.com/document/75642393/Open-Data-Kenya-Long-Version

laws speak to the broader African reality and can therefore be contextualized by African countries more efficiently.

### Existing data collection efforts

There exists multiple data collection and publication efforts by different stakeholders across different sectors on the continent. These complement mainstream data collection by governments and provide stakeholders with the needed data to inform D4D and OD4D. Existing efforts include census, surveys by national governments and cross-country multi-sectoral data collected by partners such as the AfDB among other multi-sectoral-cross country and country level efforts at both the national and sub-national by other players. While it may not be enough or be as granular or disaggregated as would be required, the vast amounts of data collected continue to provide a springboard from which more specific datasets can be collected.

### Innovation

The proliferation of new technologies, services and products such as open source applications have enabled actors to collect, publish and more effectively use data. New technological innovations are the changing pillars of socio-economic development and provide more efficient ways of resolving socio-economic risks across the continent. They provide stakeholders with tools to identify and integrate comprehensive insights into development initiatives that result in better-targeted responses and more efficient resource allocation. Open source data portals such as Comprehensive Knowledge Archive Network (CKAN) have made it possible for institutions to publish data without having to build out an infrastructure from scratch. New technologies such as the Africa Regional Data Cube (ARDC), a tool that harnesses the latest Earth observation data and satellite technology to address issues relating to agriculture, food security, deforestation, urbanization and water access are giving stakeholders new tools to address socio-economic development risks.

### Existence of cross country champions

As discussed earlier, advocacy for publication and use of OD4D is predominantly more reliant on champions than in the case of broader data for development. However for both, there have been both cross country individual and institutional champions who continue to advocate for their publication and use. These champions have significantly helped move the needle by continuously making a case among different stakeholder circles.

### Opportunities for peer learning across countries

Countries that have made significant steps in the use of D4D and OD4D, such as establishment of e-government platforms, continue to open their doors to stakeholders to foster cross country learning. These benchmarking opportunities help reduce omissions in new implementation as they are able to anticipate challenges. There also have been opportunities for cross country pollination through showcases of existing use cases at forums both online and offline.

### Availability of financing

Governments, development partners and CSOs have, and continue to provide, funding for open data for development initiatives. Dedicated budget lines by governments towards national statistics systems, and financing by development partners, support implementation of open data for development initiatives. Institutions such as the World Bank have funded open data initiatives on the continent such the Kenya Open Data Initiative (KODI)[21] and IDRC supports research and policy dialogues on open data for development in a number of countries. These, among other numerous contributions by multiple stakeholders, continue to support D4D and OD4D efforts in Africa. Further, most in-country and cross-country stakeholders working especially on OD4D are CSOs and research institutions that may not have revenue or budgets to sustainably keep working on these issues. As such the availability of funding by development partners is crucial.

### Investment in capacity building programs

Availability of necessary capacity is a key factor in ensuring accurate, timely and comprehensive data is made available and used to inform development initiatives. Existing data literacy programs have addressed the gaps in the technical skills required to manage, analyze, disseminate, and communicate data. There are multiple e-learning platforms such as the International Business Machines Corporation (IBM) and massive open online courses (MOOCS) such as edX from the Massachusetts Institute of Technology (MIT), a platform that provide stakeholders with the required training on data visualization, data analysis, data science, data journalism,

[21]Kenya Leads on Open Data in Developing Countries https://blogs.worldbank.org/opendata/kenya-leads-open-data-developing-countries

policy making among others. Offline communities and initiatives such as WanaData[22] and VizAfrica[23], hackathons and opportunities for training and workshops also provide spaces where individuals can gain skills through customized training or peer learning. These are further complemented by online communities which provide opportunities for learning through formats such as webinars.

### Existence of review and reporting mechanisms for cross country open data for development work across different domains

There exist reporting mechanisms, whether mandatory or voluntary, such as the High Level Political Forum progress reports on SDGs and the APRM reports that provide an incentive for the collection and use of data since countries need the data to demonstrate their progress towards the set out targets. Further initiatives such as the Open Data Inventory by Open Data Watch, the Open Data Readiness Assessment by the World Bank, the biennial Africa Data Devolution Report and the Open Data Barometer help countries evaluate their progress. These are complemented by thematic mechanisms in different sectors such as the Open Contracting Partnership, Extractive Industries Transparency Initiative (EITI) , Regional Strategic Analysis and Knowledge Support System (ReSAKSS) for agriculture among others. These provide recommendations on issues that countries can address to advance open data for development. Overall, review and reporting mechanisms and initiatives provide stakeholders with tools to advocate for changes within the data ecosystem.

## BARRIERS OF OPEN DATA FOR DEVELOPMENT

The identified limitations to the publication of open data for development include:

### Weak legal and policy frameworks

Legal and policy frameworks are key enablers for the use of data in development. Across Africa, many governments, non-state actors and continental institutions are grappling with the legality of data sharing and openness vis a vis privacy and the attendant data protection requirements encoded in statutes. Lack of laws and policies make institutions hesitant to share data for fear of legal ramifications. This has affected the sustainability of already implemented national open data initiatives, some of which are struggling to collect data from government MDAs due to the lack of a legal and policy framework that provides public servants with cover and which can be used to hold them to accountable. Multiple laws and or policies are required to fully address the dearth of open data including laws and policies on data protection, access to information, intellectual property, cyber security, open data among others. Most African countries do not have comprehensive laws or policies addressing these issues and in some instances there are conflicting legislations in place.

Where Access to Information (ATI) laws exist, they have provided an anchor for open data initiatives, as in the case of Kenya and Sierra Leone. While these have provided entry points they focus more on information access and have limitations with regards to prescribing formats and licensing for open datasets. This has posed challenges and further entrenched the reliance on champions and political will, both of which are not sustainable approaches in a legal and policy vacuum.

There is also a rapid expansion in the data universe with technologies such as Artificial Intelligence having great potential for unprecedented benefit for society but also great risks for human rights[24]. This has exposed new gaps in legal and policy frameworks for data in Africa affecting their ability to adequately respond to the challenges of the ever expanding technological space. With multiple AI-driven initiatives mushrooming across the continent[25] to address local development challenges, the lack of legal and policy frameworks presents a concern especially with growing anxieties on the exploitation of social media platforms[26].

### Lack of binding continental frameworks

The lack of binding continental level guidelines endorsed by key stakeholders, especially the African Union, on the use of open data for development has made it difficult to stimulate adoption at the country level. While the Africa Data Consensus[27] requires that data communities

[22]WanaData is a Pan-African network of female journalists, data scientists and techies working on changing the digital media landscape by producing and promoting data-driven news while applying digital technologies in their storytelling https://codeforkenya.org/wanada-ta/

[23]VizAfrica is a symposium that offers training in data analytics and visualization towards capacity building. https://codata.org/events/conferences/vizafrica-botswana-2019/

[24]VizAfrica is a symposium that offers training in data analytics and visualization towards capacity building. https://codata.org/events/conferences/vizafrica-botswana-2019/

[25]Artificial Intelligence Starting the policy dialogue in Africa http://webfoundation.org/docs/2017/12/Artificial-Intelligence-starting-the-policy-dialogue-in-Africa.pdf

[26]The Future of Artificial Intelligence in Africa: Risks and Opportunities https://www.theelephant.info/ideas/2019/04/18/the-future-of-artificial-intelligence-in-africa-risks-and-opportunities/

[27]Africa Data Consensus https://www.uneca.org/sites/default/files/PageAttachments/final_adc_-_english.pdf

uphold openness, it is not binding and countries can therefore choose to or not to domesticate it.

## Lack of institutional data policies

Discourses on data policies mostly happen within the context of continental guidelines or country laws and policies. Data for development is however not just a preserve of governments and as such there are many actors involved. While these actors are bound by laws and policies in jurisdictions where they operate, data policies should not only be a feature of data governance in the public sector. The lack of data policies that allow for data sharing and access at the institutional level presents a barrier to the publication and use of data. The absence of or restrictive data policies reinforce data hoarding tendencies by institutions. Where they are absent, especially within institutions routinely collecting and publishing data, questions can be raised on the security of data collected especially when it has personal identifiable information. There is a lack of clarity as to what happens to data collected beyond project implementation cycles and how that could possibly impact the safety and security of individuals whose data was collected.

## Poor data practices

The success of open data for development relies on good quality data. While there is data collected, there is a gap in collecting data that either asks the right questions or provides answers to development related questions. Most data collected does not also meet the fair principles[28] for data management that requires for data to be findable, accessible, interoperable and reusable. Good quality data needs to be accurate, timely, adequately disaggregated, reusable and comprehensive. Currently most governments and stakeholders only generate reports as PDFs[29]. The lack of raw data and inadequate metadata limits the use and value of published data. In addition, data published is not adequately disaggregated to the most granular level which decreases its usability since general data/statistics cannot be used to answer specific questions. Gender data for instance is an area with wide gaps that need to be addressed[30]. Consequently, governments traditionally prioritized data on sectors that anchor their economies. Sustainable and inclusive development however requires that governments widen data collection across different sectors.

In addition, data collection and management at national levels are quite fragmented. There are multiple data collection efforts by different government MDAs. This data is however stored on government websites with no inventory of where it can be found. Individual(s) and institution(s) seeking this data find it difficult to locate it thus impeding access.

## Lack of sustainable funding for D4D efforts

Financing for development data in Africa is mostly available through funding from development partners. A lot of open data initiatives are especially driven by CSOs and researchers who don't have the budgets to sustainably implement these initiatives due to reliance on short term project based funding. This lack of funding stifles innovation and makes it difficult to implement any initiatives sustainably. With a lot of funding from development partners, changes in their global and regional priorities/strategies also affect funding for D4D and OD4D and as such support for cross continent projects could stop or be altered without notice.

## Open for who?

The idea of data for development and more specifically open data is reliant on data being published online. It then goes without saying that for data to be accessed and meaningfully used, users need to first have the connection to access it and then have the right hardware and software to be able to process it or analyze it in different ways. According to the International Telecommunication Union (ITU), only 28.2% of individuals across the African continent use the internet[31]. Further, access to digital infrastructure and skills to make sense of the data is still very low. Access to open data is therefore not equal and may in fact deepen the 'digital divide' as its effective use requires digital infrastructure, hardware and software, financial or educational resources and skills[32].

## Imbalances in the demand and supply sides of open data

For data for development to work there needs to be both publication and uptake of the data. With governments and stakeholders increasingly making data open, there still exists a gap in the uptake and use of this data. There are very few existing use cases of initiatives that have

[28]Fair Principles https://www.go-fair.org/fair-principles/
[29]Gendered Open Data in Anglophone Africa: Bridging data gaps to advance gender equality https://statistics.africa/statistics/download/gendered-open-data-report-2018.pdf
[30]Bridging the Gap: Mapping Gender Data Availability in Africa https://opendatawatch.com/monitoring-reporting/bridging-gender-data-gaps-in-africa/

[31]Measuring digital development Facts and Figures 2019 https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf
[32]Open Data: Empowering the Empowered or Effective Data Use for Everyone? https://gurstein.wordpress.com/2010/09/02/open-data-empowering-the-empowered-or-effective-data-use-for-everyone/

stemmed from published open data. Being able to stimulate the demand side of the open data cycle is therefore a critical part of making D4D work. The lack of awareness of the existence of these datasets is one deterrent to their use. Additionally, the lack of functional feedback loops for users, makes it difficult for them to give feedback on the usefulness of datasets made available/open or to request for specific datasets that they need.

There also have been concerns of stakeholders only making available low value and low political risk datasets that do not hold meaningful potential for informing socio-economic development. There have also been multiple scenarios where institutions attach conflicting licensing to datasets that deters their use. While a dataset may be licensed as open, in some cases the website it is found on isn't and this makes it difficult for it to be used.

### Skills gaps

Technical aspects of data analysis require an in-depth understanding the data especially the context in which it exists from a socio-economic development perspective. There exists gaps in the technical skills required to manage, analyze, disseminate, and communicate data to different stakeholders since data literacy is not prioritized in many contexts especially within the public sector. In addition, most existing models of capacity building favour one-off training over sustained support making it difficult to meaningfully build capacity. It is difficult for stakeholders to master technical skills and concepts over a four or five day workshop.

Finally, while e-learning platforms provide a means for building skills, some skills require more long term training in the form of a university degree, most of which may not be available within some countries and or are not affordable for important stakeholders within and outside of government.

### Extractive data collection processes by non-state actors that then seek to restrict the data

A lot of non-state actors including development partners, private sector and CSOs collect vast amounts of data in the course of their work. However, a lot of this data is not made available to other actors or the citizens who in many instances the providers of the data. Participants in most cases do not know where the data they provided is stored, how it was used and whether there was any impact from it. Where data is made available, a lot of the data collected is not available beyond the implementation cycle of initiatives. This also means that different stakeholders are in some cases investing in collecting the same data from the same people at the same time which leads to participants feeling over researched possibly resulting in participant apathy that could negatively affect data quality. This also affects the efficient allocation of resources with stakeholders duplicating each other's efforts.

### Few impact stories on data for development

Awareness of existing use cases or impact stories of D4D and OD4D are a huge incentive for further investment by stakeholders. There however have not been many use cases or impact stories for D4D and OD4D within the African context. Where they exist, they have not been amplified enough to reach a broad audience. In cases where they have, the storytelling has not clearly demonstrated the link between the successes of these initiatives and data use. This can sometimes be attributed to the fact that sustainable socio-economic development is in most cases a result of multiple variables at play, one of which may be the data. It is therefore difficult to realistically attribute only specific results to the publication and use of data in ways that it demonstrates value for investment.

### Negative perceptions on data and open data

There is a reluctance by government to embrace open approaches due to safety concerns and fears of perceived 'misuse' of the data. Multiple stakeholders also hoard data due to perceptions that it gives them a competitive advantage over others and that it would retain its value if they do. For researchers, there is scepticism on the value of open data as it sometimes perceived as being low value and that 'valuable' resources would only be found behind a paywall. Lack of permanence of most open datasets serves to fan this perception as there is no guarantee that a dataset will be available on the same link years later due to flawed data management procedures affecting its utility in publications due to citation concerns.

### Lack of contextual innovation

There are and continue to be new technologies supporting data collection, analysis, dissemination and use. Some of the existing technologies may however not be applicable to contexts across the African continent. In addition these available data solutions may not also provide room for adjustments therefore making them difficult to use. Local innovation would serve to

bridge this gap by developing context specific tech solutions that take into consideration the legal, structural and cultural realities of different contexts.

### Lack of coordination mechanisms

Multiple stakeholders working on the African continent implement initiatives that are either similar or that complement each other's efforts. The siloed working structures make it difficult to consolidate advocacy efforts, prioritize areas of investments and has resulted in the duplication of initiatives, data collection and publication efforts with multiple dashboards featuring similar data.

### Reinforcement of existing structural inequalities

Structural inequalities permeate different aspects of society such as imbalances in economic power that put certain groups/individuals at a disadvantage. There have been concerns by stakeholders, both in the private sector and civil society, that opening up their data exposes them and or their data to exploitation by bigger actors with more resources within the same space as them. This has therefore meant very little recognition and value for their work providing no incentive for them to keep publishing their data. Additionally, approaches used to collect open data such as crowdsourcing significantly use the labour and expertise of volunteers much of which is either not recognised in the larger dataset and does not translate into any value for them.

## RECOMMENDATIONS

The following are recommendations to help support the efficient implementation of open data for development initiatives in Africa:

### Strengthening of legal and policy frameworks

In an increasingly interconnected world with new innovations that could potentially pose risks to the rights of individuals, the legal environment for open data for development needs to be up to the task. Frameworks and guidelines on data ownership, data protection, privacy, intellectual property rights and cross border data flows therefore need to be developed and implemented to support African countries create an enabling legal and policy environment for the publication and use of data while securing the rights of the public.

Lack of and or gaps in the legal and policy edifice, makes it hard to address the new challenges in the technological space some of which risk human rights. To address these, continental guidelines and or model laws need to be developed to address the aforementioned challenges. This is already being led by some public sector institutions, civil society and development partners, such as the Model Open Data Policy developed by the Africa Open Data Network. The AU, the regional economic communities and governments also need to map out legal ecosystems at the different levels to understand what policy and legal gaps exist and how they can be addressed. The Figure 3[33] below provides insight into the data ecosystem and what issues need legal and policy remedies.

### Better data collection and management processes

Good quality data is a product of good collection and management processes. Approaches


Figure 3: A Framework for data policies. Adapted from Data-Driven Development as envisioned by the World Bank Group

such as adopting data plans that help producers envision the whole life cycle of collected data, providing infrastructure for aggregation and data processing at the points of collection and ensuring datasets adhere to the FAIR principles ensures that better quality data is collected

[33]2018 Information and Communications for Development; Data-Driven Development http://documents.worldbank.org/curated/en/987471542742554246/Information-and-Communication-for-Development-2018-Data-Driven-Development

from which meaningful patterns and conclusions can be drawn. Further, taking advantage of new sources such as big data and combining them with traditional ones from NSOs could generate richer datasets. These go beyond conventional data sources and could even include indigenous data which is an important source of knowledge across the continent, providing new perspectives and supplementing existing data.

Stakeholders also need to adopt data management practices that enable sustainable access to datasets beyond implementation cycles. Continental institutions such as the AU and regional communities and NSOs have more longevity and could host the data on their websites far longer than many non state actors. For stakeholders that collect a lot of data but may not have the infrastructure to hold it, data repositories such as DataFirst[34] present an alternative to addressing the challenge of data permanence. Through the digital object identifiers they issue to every resource hosted on the platform, they ensure that this data is accessible by other parties and enable referencing in the case of research or policy justifications.

## Creative and sustainable models for financing

One off project funding opportunities have resulted in innovative initiatives implemented in Africa. However, this presents a sustainability challenge for these initiatives. Mobilization of domestic resources for country initiatives is more likely to ensure they outlive project funding and the ebb and flow of development assistance. Models such as crowd-funding and monetization of data could be explored. It is however important to acknowledge that data collected by governments is for and from the public and as such increased domestic funding should be prioritized to avoid introduction of new barriers to access such as access costs occasioned by imposition of fees from monetization.

Domestic funding for data and statistics[35] remains a challenge and leaves institutions at the mercy of development partners' support which could change due to global financial challenges, foreign policy or programming priorities. Increase budgetary allocations for data and statistics should therefore be a priority area for the government and the African Union in line with the African Charter on Statistics and other frameworks.

While being 'open' also doesn't mean free of cost, there is a need to explore financing models that do not impede access but that ensure financial sustainability of data producers. Stakeholders could also explore low cost data collection approaches such as community engagement and data collection that have the potential to generate insightful and granular data at relatively low costs[36].

## Better collaboration among actors

To foster better learning between countries, intergovernmental cross country platforms/frameworks for collaboration and learning that brings together different stakeholder groups needs to be strengthened, and in thematic areas where they are missing, established. This would help promote collaboration and learning among actors and reduce silos across different communities of practice within the data ecosystem. One example that could provide inspiration for other sectors is the Regional Strategic Analysis and Knowledge Support System (ReSAKSS), an initiative of the African Union to provide data and analysis support, learning and collaboration to support the agricultural transformation agenda.

## Capacity Building

The availability of human, technical and infrastructural capacity to produce and use data cannot be understated. Investments in capacity building should seek to increase expertise, technology[37], general awareness on open data and provide avenues to stimulate the effective use of open data for development. Capacity building therefore needs to be done on both the supply and demand sides, and at all levels; continental, national and sub-national and across different stakeholder groups.

For producers, this would include training that equips them with appropriate and context relevant data collection, processing, publishing and management skills. While there is increasing demand for data scientists and an increase in learning content for data science, institutions shouldn't peg all their hopes on data scientists who remain fairly few across Africa. Demand for basic data skills will continue to outstrip supply of data scientists for a long time to come. Alternative models could therefore be developed to increase coverage of basic and intermediate data literacy skills while also creating space for data curators, mentors and stewards with domain expertise to help analyse data and train others. This model would ensure continuous support that builds capacity more meaningfully. All this should be done concurrently with

[34]DataFirst is a research data service dedicated to giving open access to data from South Africa and other African countries https://www.datafirst.uct.ac.za/

[35]Data for development in Africa: Ensuring commitments made at the High-level meeting in Kenya are met http://devinit.org/wp-content/uploads/2017/07/data-for-development-in-Africa.pdf

[36]Ibid

[37]Open data: Unlocking innovation and performance with liquid information https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information

efforts to ensure there is financial support available for learners, e-learning platforms are more accessible and pathways to more formal academic qualifications such as university degrees.

### Increased Advocacy

A lot of misconceptions about D4D and OD4D are due to a lack of awareness. Stakeholders therefore need to invest resources and effort in raising awareness on the importance of D4D and OD4D and frame this in ways that speak to the realities of different stakeholders. Contextualized sector based interventions and strategies will be useful in winning over hearts and minds. A key part of advocacy is sharing existing use cases that could potentially be replicated in other contexts or that could provide best practices.

### Encouraging data sharing by providing incentives for stakeholders to share their data

Incentives could include demonstrating return on investment for different stakeholders. For the private sector it could be the value addition from public users innovating with their data and helping them discover new opportunities. It could also mean taking a data philanthropy approach that becomes part of their corporate social investments. For researchers incentives could include greater visibility for their work through attribution and by extension career growth. More specific incentives within the public sector can be developed depending on the context across different countries on the continent.

### Investing in innovation.

To fully realize the potential of data to contribute to the development agenda in Africa, innovative models for conducting experimentation and innovation such as incubator labs or pilot projects may need to be explored before large-scale projects are rolled out[38]. This also includes the localization of already existing solutions and building new ones to address context specific needs. It is however very important to manage expectations of key stakeholders, especially in the public sector so that failure of data innovations don't result in their exit from active participation in improving data for development but becomes part of their deliberate learning process.

### Adoption of institutional level data policies

Stakeholders need to adopt data policies that conform with continental and national frameworks and that encourage data sharing. These policies should also capture institutional data management processes and steps they take to secure the privacy and security of data collected over time. Development partners can help push this forward by reviewing their policies to require grantees to adopt policies that open up data from funded projects while taking the requisite measures to comply with legislation and protect the privacy and rights of the public.

[38]The Africa Data Revolution Report 2016 highlighting developments in African data ecosystems


Access to Information legislation has been an important enabler for open data in Ethiopia. Though the proclamation was enacted in 2008, well before the open data initiative was conceived in, it defined important legal foundations for open data initiatives to be implemented in the country.

# CASE STUDY: ETHIOPIA

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Ethiopia's development agenda is underpinned by Agenda 2030 and Africa's Agenda 2063. It is currently being implemented through the second Growth and Transformation Plan (GTP II) in the period 2015/16 to 2019/20[39]. The Growth and Transformation Plan drives Ethiopia's national vision towards becoming a low middle-income country by 2025, through sustaining the rapid, broad-based and inclusive economic growth, which accelerates economic transformation[40]. Some of its key objectives include sustained economic growth and development, domestic private sector transformation, good governance, promoting women and youth empowerment, building a climate resilient green economy among others. The transformation plan centres the intention to enhance evidence-based planning and policy making through the collection of better data and statistics, strengthening M&E systems, institutional capacity, improving the NSS and data collection. It recognizes the role of data in sustainable and inclusive development.

The place of development data is further spelt out in the National Strategy for the Development of Statistics (2015/16 – 2019/20)[41]. The strategy underscores the importance of data and statistics that respond to the national development agenda at the national and sub-national levels to

[39] Ethiopia's Data Ecosystem https://www.undp.org/content/dam/2030agenda/Publications/data-for-development/africa-data-revolution-report/Ethiopia%20-%20Final%20Report%20ADR%20%20(9-11-16).pdf
[40]Growth and Transformation Plan II (2015/16 to 2019/20) https://ethiopia.un.org/en/15231-growth-and-transformation-plan-ii
[41]National Strategy for the Development of Statistics (2015/16 – 2019/20) https://paris21.org/sites/default/files/Ethiopia-NSDS.pdf

support government planning, implementation, monitoring and evaluation, policy formulation, critical decision making, efficient service provision and allocation of resources.

Based on this, there are multiple existing use cases within the government of data publication and use. The Ministry of Agriculture (MoA) has and continues to collaborate with stakeholders to share soil and agronomy data. This has included publishing the data and establishing communication channels to create awareness among the stakeholders on the importance of data sharing. The Ministry of Science and Higher Education (MoSHE) has also embarked on an initiative to capture higher education related data to be shared among universities and other research and development institutions. Other sectoral institutions including the Ministry of Health, Ministry of Education, Ministry of Finance and Economic Cooperation also collect lots of data, collections which are not yet being shared or disseminated.

## OPEN DATA FOR DEVELOPMENT IN ETHIOPIA

The implementation of the national open data initiative in Ethiopia is anchored on the Freedom of Mass Media and Access to Information Proclamation of Ethiopia (Proclamation No: 590/2008 of 2008). The Act under Article 13 requires public entities to publish information concerning, among others, a description of the type of the records under its possession, a brief description of the contents of its records and the detailed explanation of the procedures to be followed by persons who wish to access this information[42]. Though the proclamation was enacted in 2008, well before the idea of open data was conceived in Ethiopia, it defined important legal foundations for open data initiatives to be implemented in the country.

With the proliferation of data technologies worldwide and the popularity of open data initiatives, Ethiopia set up a national open data initiative in 2016 on the recommendation of the World Bank's Open Data Readiness Assessment (ODRA). A national open data portal (data.gov.et) was launched and a cross-agency Open Data Steering Committee established to stimulate the demand for published datasets. The portal which published 29 datasets was managed by the Ministry of Information and Communication Technology (MCIT) and the Central Statistical Agency (CSA), the custodian of all government data in Ethiopia. The initiative aimed at improving government transparency, improving access to government held data and promoting innovation built from published datasets for better development outcomes.

[42]The Freedom of Mass Media and Access to Information Proclamation of Ethiopia https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/85148/95161/F104491799/ETH85148.pdf



## STAKEHOLDERS

Ethiopia's data ecosystem is mainly driven by government institutions. Government ministries, departments and agencies (MDAs) have recognized the importance of the use of data for development in their respective sectors. As such there is a growing demand for data and willingness from some government institutions to share such data even when it is only shared in a closed user community within their respective sectors.

The Central Statistics Agency is at the center of the data ecosystem supported by other government MDAs such as the Statistics Council, National Planning Commission, Ministry of Finance and Economic Cooperation, National Bank of Ethiopia, research institutes and professional associations. Other stakeholders in the data for development ecosystem in Ethiopia include development partners, higher education institutions and research institutions, CSOs, the private sector and citizens. Among the key stakeholders identified as being key to advancing open data for development initiatives in Ethiopia are: the Central Statistical Agency of Ethiopia, the Ministry of Innovation and Technology, the National Planning Commission, National Bank of Ethiopia, Ministry of Agriculture, Ministry of Science and Higher Education and Public Universities and Research Centers.

### Stakeholder roles

**Government MDAs**

The Ministry of Innovation and Technology (MInT) is tasked to advance the adoption and innovation of technology for the common good of citizens and extensive utilization of information technology as its main focus area. MInT is tasked to embark on technology innovations aligned with the development strategy of the nation. The implementation of technology infrastructure, development of data standards, data dissemination policy, procedures and guidelines and awareness creation events are also facilitated by the MInT.

The Central Statistical Agency (CSA) of Ethiopia is the custodian of national statistical data. It is in charge of data collection, production, analysis, quality control and dissemination of national

statistical data. CSA also conducts surveys on various sectors, census and routinely collects data from various government MDAs.

The National Planning Commission (NPC) is responsible for conducting short and long term strategic planning of the government including the Growth and Transformation Plan.

The National Bank of Ethiopia (NBE) is the central bank which monitors the financial sector in the country. NBE generates data to be consumed at macro-level for the country which could be an input to develop strategy.

Ethiopia's population is largely employed in the agriculture sector. About 85% of the total population are engaged in farming[43]. The Ministry of Agriculture (MoA) is therefore considered a major player in the data for development ecosystem in Ethiopia. MoA is actively engaged in data sharing initiatives to capture, analyze and share various data sets on agriculture, a case in point is soil and agronomy data. It has also drafted a data sharing policy and is working on the development of data sharing procedures.

The Ministry of Science and Higher Education (MoSHE) is tasked with advancing scientific research and higher education learning in the country. All the public universities are under the custodian of MoSHE. MoSHE was identified as one of the key stakeholders since it owns a lot of research data across different sectors through academic institutions and research centers and is currently working to develop a data sharing platform to make research data accessible to the academic community.

**CSOs' role** in the data ecosystem is still quite limited. They however hold the potential to play a much bigger role in advancing initiatives especially in the fields of awareness creation and identifying and nurturing champions. They could also serve as a bridge between the citizens and government to contribute their share of collected data.

**Development partners** such as the World Bank are largely investing and financing (open) data for development initiatives especially within government.

**Citizens** were identified as main consumers of data. However the demand for data by citizens is still quite low.

**The private sector** is currently missing from the ecosystem but holds potential to play a bigger role in Ethiopia's socio-economic development and should as such engage more in (open) data for development initiatives.

The data for development stakeholders in Ethiopia are largely government institutions and there is therefore a need for other actors to get more involved.

## DRIVERS OF (OPEN) DATA FOR DEVELOPMENT IN ETHIOPIA

The following were identified as enabling factors for the use and publication of data for development in Ethiopia:

### Existing development policies

The Second Ethiopian Growth and Transformation Plan (GTP-II) which sets out Ethiopia's macro and sectoral goals, targets and the expected results of the development strategy. In addition, Ethiopia recently embarked on a Home-grown Economic Reform Agenda which outlines macro-economic, structural, and sectoral reforms that will pave the path for all-rounded economic development and inclusive growth[44].

These strategies require timely and accurate data to conduct detailed planning and to develop a national monitoring and evaluation framework that can be used as a guide to monitor and evaluate the performance and implementation of set targets. Both strategies are data hungry engagements which provide an incentive for more data collection and use. The Growth and

[43]FAO in Ethiopia http://www.fao.org/ethiopia/fao-in-ethiopia/ethiopia-at-a-glance/en/

[44] Ethiopian government launches Homegrown Economic Reform Programme http://www.africanreview.com/finance/economy/ethiopian-government-launches-homegrown-economic-reform-programme

Transformation Plan also explicitly envisions aspirations for better data collection and use setting the tone for the data ecosystem.

### Enabling legal and policy frameworks

The Freedom of Mass Media and Access to Information Proclamation of Ethiopia (Proclamation No: 590/2008 of 2008) provides a foundation for data sharing. The proclamation allows individuals to access government data through requests, mostly provided in print format. It provides an overall guarantee for access to information, privacy and outlines the reactive disclosure of information through requests. This proclamation provides an enabling environment for the publication of (open) data for development. MCIT also published a draft Open Data Policy and Guideline[45] though it is not yet operational.

### Government willingness to share data

There has been an appreciation by government officials of the importance of publication and use of data. This in addition to an appreciation for the importance of willingness by top government officials in various MDAs to support data for development initiatives as is evident from the existing initiatives in government. This has helped to create an enabling environment for existing initiatives to thrive and for new initiatives to be implemented.

### The quest by high level government officials to utilize collected data

There have been efforts by government MDAs to digitize hard copies of data stockpiled in their respective offices. Government offices are also engaged in implementing vertical process automation solutions and office automation systems which in turn generate data that can be utilized by other government MDAs, the private sector or development partners. The effort put into digitizing data and packaging data for specific information requests from consumers has provided an incentive for government MDAs to consider opening up the data they hold.

### The growing demand for data by development partners and the international community

Global and continental initiatives such as the Sustainable Development Goals (SDG) and The Africa Agenda 2063 also drive the nation's data production, management and dissemination.

[45]Consultation on the Recommendations and Working Text of the National Open Data Policy of the Government of Ethiopia http://www.ethiopia.gov.et/documents/20181/23610/Draft+Open+Data+Policy+and+Guideline/5060aba1-2ce4-4a51-9265-3945c1f5df88



Most of these global initiatives require national data to measure performance. To report on progress for the SDGs for instance, countries need statistics and therefore need to collect data.

Availability of technological infrastructures and new ways of data collection such as crowdsourcing through social media have created the possibility of co-producing huge amounts of data which could be used to inform development initiatives. Additionally the idea of the data revolution has made data a crucial resource. Decisions require accurate and timely data, hence the need for a functioning data ecosystem to fulfil this need.

### Emergence of technology savvy society

With the growth of technology and improvement of local telecommunication and application infrastructure as well as the popularity of social media platforms, the youth are increasingly interested in the application of technology and technological tools most of which need data or produce data.

### Open data awareness creation trainings

As part of efforts to stimulate demand for data published on the national open data portal, trainings were conducted with staff from government MDAs. This helped build their capacity to publish open datasets.

## BARRIERS OF (OPEN) DATA FOR DEVELOPMENT IN ETHIOPIA

The following were identified as challenges impeding the effective implementation of open data for development initiatives in Ethiopia:

### Lack of awareness and capacity at different levels.

There are indications that some in government MDAs misunderstand data sharing with the perception that shared data is subject to misrepresentation and uncontrolled misuse being pervasive. This is accompanied by fear that they would lose their power or some perceived privilege when they share or open up the data they have. The notion that the data belongs to the respective government organizations and keeping it tight would be beneficial to the government is strongly held by some. This perception of data sharing persists mainly due to lack of awareness of the potential contributions of D4D/OD4D towards all-rounded national development. Additionally, most government institutions, including those which are expected to spearhead D4D initiatives lack the capacity to publish and share data. The issue is further

exacerbated by the lack of accountability, clear mandates or formality among government institutions roles on capacity building activities.

### Lack of coordination among government institutions

These institutions, in one way or another, play active roles in producing, analyzing or disseminating data which is critical. Their roles could include providing and maintaining the infrastructure to support data sharing, drafting of standards for the various phases of data management to ensure interoperability and smooth sharing, enacting legal or procedural frameworks, monitoring and handling freedom of information access, managing the actual data, and or adding value to data to catalyze socio-economic development.

There are visible shortcomings in coordination of the implementation of data for development initiatives across government (and related executive and oversight structures). The infrastructure required and the drafting of standards to ensure the interoperability of government information systems are likely to fall within the mandate of a government department responsible for ICTs, the justice system, in some cases dedicated agencies such as those responsible for monitoring and handling freedom of information requests or even the statistical agency which is already responsible for conducting national surveys, making collected data available and ensuring the quality of statistics across government. A formal coordination platform is almost non-existent which poses a serious challenge for the implementation of initiatives.

### Unstructured/unregulated data ownership by government institutions.

There is no clear mandate which defines data ownership among government institutions. For instance, the Central Statistical Agency and Ministry of Agriculture may conduct similar surveys to produce the same datasets which mostly happens due to lack of coordination and unavailability of clearly defined mandates and responsibilities. Such duplication creates confusion among data consumers as there is no guideline to verify the veracity and accuracy of different datasets as produced and managed by multiple owners.

### Lack of a quality assurance framework for collected data.

From the data providers point of view, they have low confidence in the quality of data collected which in turn makes them hesitant to share the data, as they do not want to be accountable for any 'harm' resulting from the use of potentially substandard data.

### Weaknesses in existing legal frameworks.

While the Freedom of Mass Media and Access to Information Proclamation of Ethiopia (Proclamation No: 590/2008 of 2008) provides a foundation for data sharing, it does not prescribe formats in which data should be shared and this is left at the discretion of government institutions. Most institutions therefore provide data in print formats instead of publishing raw data in electronic formats. It also provides for reactive disclosure of information through requests rather than the proactive publication of reusable data in electronic formats which is what open data exists to do.

### Restructuring within government ministries.

When it was launched the national open data initiative was hosted by the Ministry of Information and Communication Technology(MCIT). However, with restructuring in 2018 the MCIT was merged with the Ministry of Science and Technology (MoST) to form the Ministry of Innovation Technology (MInT). This interfered with the national open data initiative's institutionalization and the portal has since become inaccessible. With the lack of champions within and outside of government momentum on this initiative has significantly slowed down.

### Publication of low value and outdated datasets

This was especially noted on the national open data portal. The reluctance of actors to publish data on the national open data portal was attributed to the difficulty in getting timely data from government MDAs. Very few datasets ended up being published and those that did were obsolete.

### Lack of demand

Lacklustre demand has been a setback that limits the success of open data for development initiatives in the country. From discussions with study participants, the lack of evidence of data utilization from the user side is discouraging. The ODRA identified this lack of demand which can be attributed to lack of awareness and capacity. The report also stated that "*...there seemed to be no active demand for data from civil society organizations, the private sector or the media;*

*as things stand these parties usually reported on the synthesized information that was provided by various MDAs without further analysis.*" The private sector in the information technology field is still in its infancy as compared to other African countries and a significant portion of the sector is engaged in hardware rather than data-driven solutions. There however have been a few communities such as Open Knowledge Ethiopia, and HacksHackers Addis Ababa, who have been engaged in promoting open data initiatives more specifically conducting workshops and training to stimulate demand.

## RECOMMENDATIONS

As discussed above, open data for development initiatives in Ethiopia are implemented in a very fragmented manner and while there may not be many existing initiatives in Ethiopia, there is a fertile ground for these initiatives to be implemented. The following areas can be addressed to create an enabling environment for the effective implementation of (open) data for development initiatives in Ethiopia. These include:

### Recommendation 1

Advocacy on the value of (open) data and providing data in machine-readable formats (e.g. csv, MS Excel) over human-readable formats (e.g. PDFs) is needed. A lot of government data is 'locked up' in PDFs placing restrictions on the reuse of the data. A key message to get across to public servants is that governments can publish open data without sharing sensitive information i.e, that does not contravene the privacy rights of individuals or jeopardize state security. This is an existing common misconception.

### Recommendation 2

Having the government engage with external stakeholders on a regular basis (such as researchers, private sector, entrepreneurs, CSOs, etc.) could prove to be catalytic. These external stakeholders may participate in the data ecosystem as data consumers, data intermediaries or data providers. Government data initiatives have to identify these stakeholders and establish mechanisms for collaboration.

### Recommendation 3

Putting in place legal, policy and procedural frameworks which will guide the implementation of (open) data for development initiatives. These should also address issues of data ownership between government agencies.

### Recommendation 4

Designing and developing a monitoring and evaluation framework to understand the return on investment for (open) data for development initiatives would be valuable for implementers and champions. These can borrow from existing tools including the Global Open Data Index (GODI), Open Data Inventory and Open Data Barometer (ODB). Impact assessment case studies should also be conducted to measure the overall impact of implemented initiatives in Ethiopia.

### Recommendation 5

Deliberate programs and initiatives to nurture champions for open data publication and use within government and among other stakeholders such as CSO, academia and private sector would help advocate for increased implementation.

### Recommendation 6

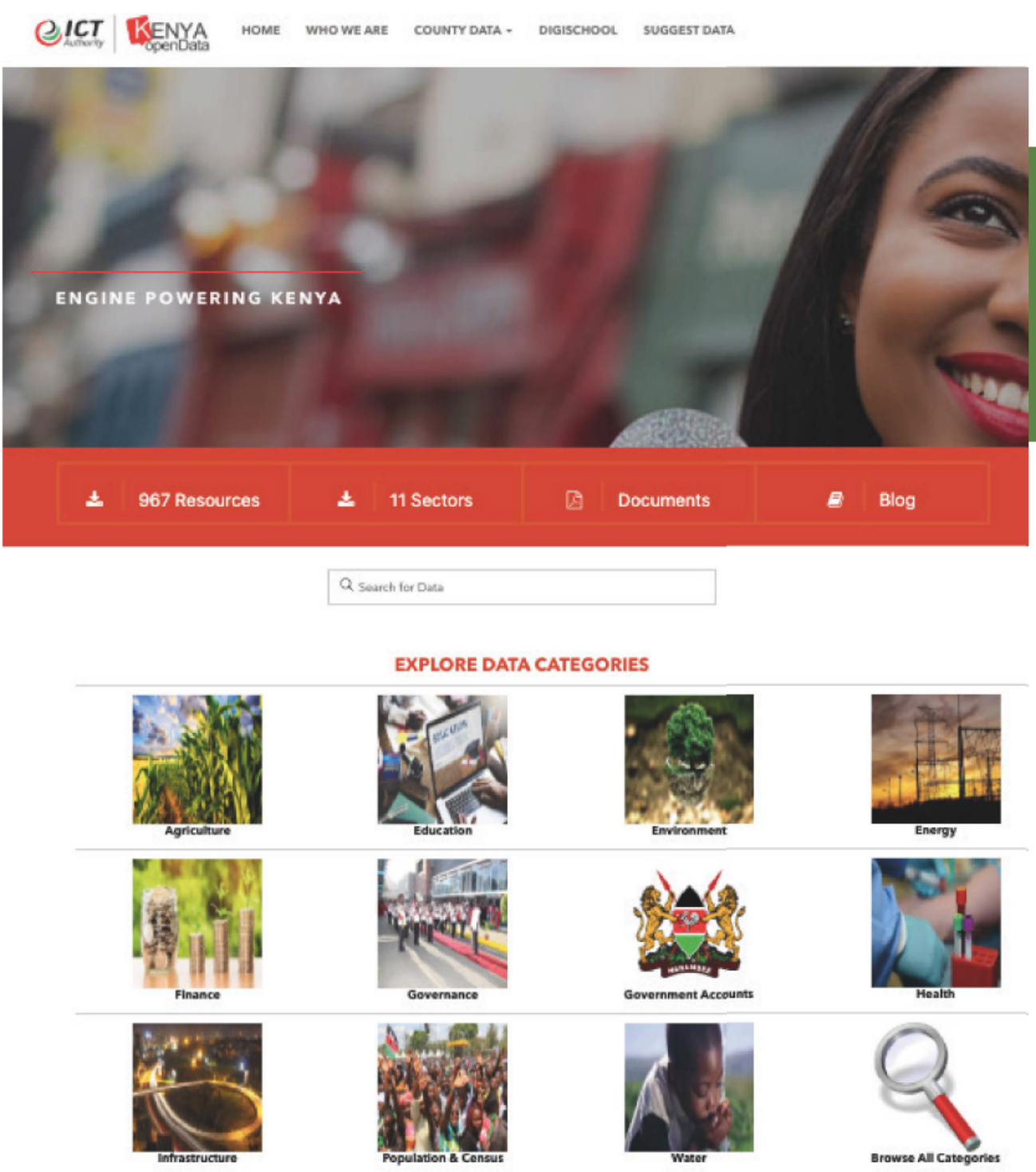
Setting up a data inventory and mechanisms for routine quality data collection and publication would be key to helping stakeholders know what data is available and how it is generated. This would also help increase uptake of the data and contribute to trust building.

### Recommendation 7

Improving ICT infrastructure to enable fast and reliable sharing of digital content both within government and between government and external stakeholders would be an important driver. Many ministries bemoaned slow and unreliable internet connections.

### Recommendation 8

Supporting the transition from paper-based data collection to digital systems is key. In many cases, reporting systems are still paper-based making it difficult for government ministries to share data more broadly using available technologies and platforms.




The Kenya Open Data Initiative portal's homepage.

# CASE STUDY: KENYA

By Sulekha Adan and Dickson Minjire

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Kenya's development agenda is enshrined in its Vision 2030[46] which captures its aspirations to be a globally competitive and prosperous country with a high quality of life. This broad development agenda is implemented through Medium Term Plans. Kenya is currently implementing the Third Medium Term Plan 2018-2022[47] which prioritizes the Big Four initiatives; manufacturing, food security and nutrition, universal health coverage and affordable housing. The plan builds on efforts in previous plans that sought to build the national statistic's systems capacity both at the national and sub-national levels of government and across different sectors. It acknowledges the importance of data in enabling the envisioned socio-economic transformation. It seeks to improve the quality of data for policy, planning, budgeting and supporting the reduction in data gaps through capacity building and appropriate financial and technical support to improve the national statistical capacity.

There are multiple sector specific data for development initiatives by both government and non-state actors including CSOs, development partners, private sector and others to address tax reforms, public contracting, improving access to healthcare and education, public service

[46]About Vision 2030. http://vision2030.go.ke/enablers-and-macros/#80
[47]Third Medium Term Plan 2018-2022 http://vision2030.go.ke/inc/uploads/2019/01/THIRD-MEDIUM-TERM-PLAN-2018-2022.pdf

delivery, streamlining agricultural value chains among others. All these initiatives contribute towards achieving Vision 2030.

## OPEN DATA FOR DEVELOPMENT IN KENYA

While the Kenya National Bureau of Statistics (KNBS) is Kenya's primary provider and custodian of official statistics[48], discourse on open data for development in Kenya is articulated mostly within the context of Kenya Open Data Initiative (KODI). The initiative saw the launch of Sub-Saharan Africa's first government open data portal (opendata.go.ke) in July 2011 under the Ministry of Information Communications and Technology. Its goal was to provide open data to the public across different sectors with the view that this would increase users' capacity to interpret and present data in various ways that contribute to socio-economic development. In addition, there are open data for development initiatives and advocacy efforts by non-state actors that also seek to contribute to Kenya's socio-economic development agenda.

## STAKEHOLDERS

The data ecosystem in Kenya is quite robust with multiple stakeholders participating and playing different roles. These stakeholders include:

### Government Institutions

The Kenya National Bureau of Statistics (KNBS), the national statistics office (NSO), is legally mandated[49] to collect and disseminate official statistics. It is at the center of the National Statistical System and collects data through routine surveys and census. The government through its Ministries Department and Agencies (MDAs) also produces and uses data at both national and sub-national levels of government. When shared, this data is published on ministry websites where it can be accessed. KODI)also provides a dedicated portal for publication of open government data and provides sector level data at both national and sub-national level. Government MDAs identified as playing a key role in Kenya's open data ecosystem include the Kenya National Bureau of Statistics (KNBS), the ICT Authority, the Ministry of Agriculture, the National Treasury, the Ministry of Health, the Kenya Agriculture and Livestock Research Organization (KALRO)[50] and the Kenya Institute of Public Policy Research and Analysis (KIPPRA)[51] .

### Development Partners

These partners have and continue to play a key role in supporting open data initiatives in Kenya. This has been through funding data initiatives, research on open data and providing guidelines that support the implementation of the data for development initiatives in Kenya both by government MDAs, CSOs and community based organizations. Development partners also collect, publish and use data some of which is published in open formats and informs planning and implementation by different stakeholders. Some of the identified partners currently supporting work in Kenya include the World Bank, the African Development Bank, World Wide Web Foundation,  International Center for Development Research (IDRC), Open Knowledge Foundation (OKFN), the Global Partnership on Sustainable Development Data (GPSDD) among others.

### Civil Society Organizations

Civil Society Organizations have been at the forefront in supporting the publication and use of open data for development through advocacy, capacity building and implementing open data for development initiatives. As both data producers and users, they have been very instrumental in helping to create an enabling legal environment, building human capacity through training and providing direct assistance especially to government MDAs for open data initiatives that contribute to better socio-economic development outcomes in Kenya. Some of the CSOs identified as being currently involved in the D4D ecosystem include the International Budget Partnership (IBP-K), Development Initiatives, HIVOS, Article 19, Twaweza East Africa, Local Development Research Institute (LDRI), Development Gateway, Open Institute, Association of Freelance Journalists and Open Data Institute.

### Private Sector

The private sector in Kenya generates and uses huge amounts of data to inform their service delivery, plan and design new products and services for their customers. While their presence cannot be understated in the data ecosystem, the private sector is still largely absent in the

[48]Development of the National Statistical System Project. World Bank Report 110966, 2016.  http://documents.worldbank.org/curated/en/392961483550872859/text/110966-PPAR-P085414-PUBLIC.txt
[49]Kenya Law (2006). Statistics Act of 2006. http://kenyalaw.org/kl/fileadmin/pdfdownloads/Acts/StatisticsAct_Cap112.pdf

[50]_____ Kenya Agriculture and Livestock Research Organization. http://www.kalro.org/
[51]_____ Kenya Institute of Public Policy Research and Analysis. https://kippra.or.ke/

open data ecosystem in Kenya. This has been attributed to multiple issues including the need to stay ahead of the competition and prohibitive investment costs for anonymizing data since a big portion of the data collected includes personally identifying information.

### Academia

Academic institutions are increasingly getting more involved in the data ecosystem in Kenya. Multiple academic institutions are making their data available through repositories. There have also been individual academic champions that have led advocacy efforts and policy dialogues for open data. There is however an opportunity for academic institutions to be involved more since they generate lots of data from research they carry out. Academic institutions identified as currently publishing, using or advocating for the publication and use of open data include Egerton University through Tegemeo Institute, Strathmore University, Jomo Kenyatta University of Agriculture and Technology and the University of Nairobi.

### Religious Institutions

Religious institutions have actively been involved in data production and use since independence. They have however not been actively involved in the open data ecosystem in Kenya. Some religious institutions have run critical service provision centers such as schools and health centers for years. Some of the first schools in Kenya were started by churches and they continue to provide these services. These institutions hold lots of historical data that could provide insight and there is a need to incentivize them to participate in the open data ecosystem.

### Citizens

Although a lot of data produced is meant to improve service delivery for citizens, they have not been as involved in the open data ecosystem in Kenya. While there have been existing use cases of citizens using available data, these have not been as many or have not been amplified. However, models for Citizen Generated Data (CGD)[52] that center citizens as both producers and users of data are increasingly emerging. These provide citizens with data and information that they use to advocate for better services and hold their leaders accountable.

[52]Global Partnership on Sustainable Development Data (2016). Making Use of Citizen-Generated Data. http://www.data4sdgs.org/resources/making-use-citizen-generated-data



## DRIVERS OF OPEN DATA FOR DEVELOPMENT IN KENYA

The following were identified enabling factors for the use and publication of (open)data for development in Kenya:

### Enabling policy and legislative frameworks

Article 35 of the Constitution of Kenya 2010 guarantees the right to access information. This is now being operationalized through the Access to Information Act, 2016[53] whose implementation is on-going. The Statistics Act, 2006, provides for the collection, compilation, analysis, publication and dissemination of statistical information, and the co-ordination of the national statistical system. The Public Financial Management Act explicitly requires budget, budget execution and other public finance information to be made public within given timelines.

The Data Protection Act, 2019[54] is an important enabler as it provides the legal guidelines for data processing and management whether it is closed, shared or open. It seeks '*to regulate the processing of personal data; to provide for the rights of data subjects and obligations of data controllers and processors*'. The law, which was recently passed by parliament plays a crucial role in ensuring data accuracy and safety.

The government recognized the important role played by ICT in a country's socio-economic development. One of the key objectives of the Kenya ICT Strategy of 2006[55] was "*to facilitate sustained economic growth and poverty reduction; promote social justice and equity; mainstream gender in national development; empower the youth and disadvantaged groups; stimulate investment and innovation in ICT; and achieve universal access.*"

### Advanced democratic space and political will

The democratic space and political will in Kenya has enabled a stronger push for the publication open data[56]. The promulgation of the Constitution of Kenya 2010 provides the basis for both the publication and access of data as it guarantees citizens' right to access information

[53]Access to Information Act, 2016 https://www.cuk.ac.ke/wp-content/uploads/2018/04/Access-to-Information-ActNo31.pdf
[54]The Data Protection Act 2019
[55]Ministry of Information Communications and Technology (2006). Information Communications and Technology (ICT) Policy. http://icta.go.ke/pdf/National-ICT-Policy-20June2016.pdf
[56]Data for Development in Africa http://devinit.org/wp-content/uploads/2017/07/data-for-development-in-Africa.pdf

held by the government.  This has enabled the publication especially of government data by government MDAs and different ways for citizens to use this data as in the case of Baringo County[57] where during public participation forums, citizens use data published by the county government to track progress on projects being implemented.

Additionally, existing political will has resulted in Kenya joining global initiatives that strengthened its commitment to publish open data especially across different sectors. Kenya joined the Open Government Partnership (OGP) in 2011[58] in its efforts to further open up governance and governance processes. The initiative provided the launch pad for the Kenya Open Data Initiative KODI and has since shaped the government's commitment to data for development through commitments to open up public contracting data to support anti-corruption efforts and enable better access to public procurement opportunities by women, youth and Persons with Disabilities[59].

## Tech advancement and increased internet access

Advancements in technology and improvement in internet access have played an essential role in supporting the publications and use of (open) data for development. Technology advancements have seen data collection, analysis, storage and dissemination replace/supplement paper based systems with more efficient approaches which have enabled the collection, processing and storage of larger amounts of more granular and historical data through the use of technology such as mobile phones, satellite imagery and web servers to store information among others.

Kenya has also positioned itself as a global and regional ICT hub with multiple innovations coming up and better uptake of existing technologies. Between 2000-2011, the ICT sector outperformed all other segments of the economy, growing an average of 20 percent annually and propelling the combined transport and communications sector into the economy's second largest sector[60].  The robust environment significantly impacting the financial sector[61], agriculture, healthcare and other areas of the economy[62] has been critical in supporting technologies anchoring data collection, publication and use.

[57]Irura, Mark. Integrating the Open County Initiative with Participatory Budgeting – a Kickstart for Baringo and Elgeyo Marakwet Counties. 26 Feb. 2019, openinstitute.com/integrating-the-open-county-initiative-with-participatory-budgeting-a-kickstart-for-baringo-and-elgeyo-marakwet-counties/

[58] Open Government Partnership (2011) Kenya. https://www.opengovpartnership.org/members/kenya/

[59]Open Government Partnership- Open Contracting (KE0019) https://www.opengovpartnership.org/members/kenya/commitments/KE0019/

[60]Rahemtulla, H et al (2011). Open Data in Kenya: Case Study of the Underlying Drivers, Principal Objectives and Evolution of One of the First Open Data Initiative in Africa.

[61]Ibid



## Existence of champions

The existence of both individual and institutional champions working to support open data for development initiatives has been a key enabler for implementation In Kenya. One of the most prominent champions for open data, Dr. Bitange Ndemo, the Permanent Secretary in the Ministry of Information and Communication at the time of the KODI launch, used the 2006 Kenya ICT Strategy to advocate for the publication of government data by different ministries. This set the tone for KODI going forward. In subsequent years, open data champions within government, CSOs, academia have influenced and continued to help continually make the case for it and support its implementation.

## Existing advocacy efforts

Advocacy has been one of the key drivers for data and, more specifically, open data in development. Through training, citizens, government and CSO staff have become more enlightened on the publication and use of open data. The increase in citizen generate data initiatives has also helped citizens to collect and use data and information to advocate for better service delivery from the government.

## The Sustainable Development Goals

Open data has also been accelerated by the Sustainable Development Goals (SDGs) due to the high data burden placed on countries by the framework. With the increased requirements for data on reporting and the use of data to support mobilization of funding and public participation, countries like Kenya have had to improve dialogue and collaboration with non state actors, resulting in increased uptake of efforts such as the Open Institute Global Goals Local Impact initiative. Sustainable Development Goals The involvement in open data has also been accelerated by the Sustainable Development Goals (SDGs).

The High Level Political Forum's Voluntary National Reviews (VNRs) for the SDGs also make it possible to share experiences, successes, challenges and lessons learned in implementing the 2030 Agenda. A key part of the VNR is the provision of data to support reporting by countries.

[62]Ibid

This has provided a huge incentive for the Kenyan government to collect data since it needs it to track progress on SDGs implementation

## BARRIERS OF (OPEN) DATA FOR DEVELOPMENT IN KENYA

The following were identified as challenges impeding the effective implementation of (open) data for development initiatives in Kenya:

### Lack of adequate resources/finances

Inadequate resources remain a barrier to effective collection, analysis, access and dissemination of D4D and OD4D. Funding for data and open data remains very low as the government has not provided domestic funding for open data. Data collection, analysis, storage and dissemination is expensive and stakeholders continue to point to inadequate resources allocation to these activities[63]. This has affected the efforts to come up with data/open data initiatives within the government. It has also affected hiring of sufficient skilled staff and the purchase of infrastructure to be used in all data related activities. For the media, inadequate resources have made it hard to convene data literacy spaces where one can bring together journalists and offer training on data literacy (Winnie Kamau, 2019).

### Data Interoperability

Data is collected using different methods and tools. It makes it difficult to compare different kinds of data using one analytical tool when structures and systems are not put in place to facilitate interoperability. Lack of standardized tools for data collection has prevented Citizen Generated Data (CGD) uptake by the government as the methods through which this data was collected are considered questionable (Odhiambo, 2019). There is a need to have a standardized methodology for data collection. This ensures that when data from different counties or other administrative units is put together, it is comparable and easy to draw conclusions. Kenya National Bureau of Statistics has been at the forefront in using standardized tools during Household Surveys and Census.

### Capacity of the citizens

The general public has not yet been actively engaged in the data/open data conversation. Access to data gives citizens more insight on what progress has been made in different sectors of economy. This translates to rich participation in the public forums as their discussions and concerns will be based on data available (Odhiambo, 2019).

### Lack of clarity on domiciling of open data

The location within government where the open data agenda is domiciled remains somewhat ambiguous. While the custodians of KODI at its launch were the current ICT Authority, the most prominent champions and perceived agenda holders are within the Office of the Deputy President. This lack of clarity has probably contributed to the reticence of some MDAs in engaging on open data. According to Kinuthia (2019), *"We didn't think about getting government to buy-in to the idea. There are champions within government, but there wasn't buy-in within the government properly. Secondly there is a very small club of people who understand what this is, what it's about, why it started, and what can be done next."*

### Politicization of Data

There have been concerns of politicization of data especially census data to influence decisions on resource allocation. Data has been utilized by politicians to influence decisions on resource allocation within their areas of administration. Political use of data can result in being interpreted from a narrow perspective that does not represent the actual situation on the ground. This also means that perceptions by users of possible data manipulation to fit a political position in order to influence resource allocation continue to stakeholder engagement. This works to position published data as political play rather than a presentation of facts which can negatively impact the broader data ecosystem by watering down the credibility of published data and fanning existing negative perceptions on the use of data for development.

### Data presentation formats

There's a challenge around the format in which the data is presented. PDFs are a very common way of data presentation especially by the government yet they area also among the more difficult ones to use for data analysis (Kinuthia, 2019; Odhiambo, 2019). Kamau adds that the

[63] African Open Data Network Stakeholders' Validation Workshop (24th May, 2019). https://docs.google.com/document/d/1zDbdN-L7g60uO7ZZ1F52Z0hEwBy4V8qh5beEM8Mk_WI/edit

government cannot claim that their data is open while a lot of it is presented in PDF files that need specialized software to extract it  for analysis.

## RECOMMENDATIONS

### Building Capacity of stakeholders

Continuous capacity building for government officials to equip them with skills to share data that responds to development challenges the public and other stakeholders are concerned about would be critical to ensuring sustained demand is realized. This would also help to address existing misconceptions about open data. Capacity building for users such as data journalists and citizens through structured training could also help trigger demand for and better uptake of already published data. Further basic data literacy trainings with the political class could help address misconceptions that fan politicization of data.

### Push agenda aligned to the government's work by international organizations

International organizations and advocates of open data should consider ensuring advocacy, capacity building and funding of open data aligns with the administration's agenda and existing international commitments (Leonida, 2019). Resistance from the government sometime arises from lack of involvement or alignment of International Organizations' projects with the national development agenda.

### Engage beyond the converted

Collaboration in the data/open data spaces has been limited to few organizations who are already open data converts and champions located in the capital. As Kinuthia reiterated, there is a group of data champions who completely understand data and open data for development.  For these initiatives to grow in terms of reach, these conversations should go beyond this constituency of data enthusiasts. Involvement of  more stakeholders will bring more perspectives on how to make D4D and OD4D community larger and more inclusive.

### Data users should be more upfront and demand for data

Since there are laws and acts that give citizens the right to information, they should be more upfront in demanding for the data. This only happens if their capacity is built to know what right they possess as citizens.

### Implementation of data sharing bills/laws

Kenya's existing laws on Access to Information and Data Protection as well as other legislation on procurement, public finance management, statistics etc could be sufficient to accelerate momentum on data for development if well implemented. The finalization and implementation of the regulations for both the Access to Information and Data Protection laws should be prioritized and accelerated.

### Improve Collaboration and Coordination

The issue of collaboration and coordination of efforts between organizations working in similar sectors has been emphasized previously. According to Kinyanjui and Biegon from IBP (2019), this will save on resources and ensure that coordination of efforts and expertise eliminates bad and confusing data that exists mainly both in government and the CSO space.


# CASE STUDY: RWANDA

By Claude Migisha

Claude K. Migisha is a technologist with over a decade of experience in the areas of digital innovations, digital transformation and the integration of digital into international development initiatives (ICT4D) with focus on developing technical strategies, overseeing project implementations and assessing solutions. He holds a MSc in ICT and Development from The University of Manchester, UK as a Chevening Scholar.

The recent Africa Data Revolution 2018[64] report observes that the open data space in most African countries is spearheaded by National Statistics Offices (NSO) and predominantly and can seem vibrant if viewed from the supply side of open data. This is no different in Rwanda. The National Institute of Statistics of Rwanda (NISR) has, in close collaboration with the Ministry of ICT and innovation (MICT), been championing the open data agenda for a number of years.

On the African continent, Rwanda has made some achievements since the early days of the data revolution. It all began with passing an Access to Information (ATI) law – also known as freedom of information (FOI) – back in 2013. The purpose of this law is to enable both the public and journalists to access information/data possessed by public organs and some private bodies. In the same year, an Open Data Readiness Assessment (ODRA) was jointly conducted by the government and the World Bank. The ODRA set out a number of priority areas in line with accelerating open data adoption by both the government and private actors. One of the main highlights of the ODRA was the need to develop an open data policy that would guide all interventions.

Four years later in 2017, a data revolution policy was passed by the government encompassing some aspects of open data. For instance, the policy recognizes that open data should be pub-

[64] Africa Data Revolution Report 2018 https://adrr.statistics.africa/adrr/downloads/Africa-data-revolution-report-2018.pdf

lished by both public and private actors. Moreover, the policy goes on to define what is open data and how best it can be produced and published. Importantly, the policy advocates for the need to; have a centralised national open data portal, conduct capacity building in data management, eliminate the frequent silo-based way of data handling within government entities, etc.

In response to the policy recommendations, both NISR and MICT have been implementing some initiatives. In the wake of the policy enactment, a study was commissioned to develop a detailed feasibility study for the roll out of a national open data portal. This is a prelude to the actual development of the portal, which is scheduled to occur before the end of 2020. On top of these policy recommended activities, the NISR has been running a number of open data related activities albeit on a small scale. For instance, on a yearly basis, they organise a data-journalism competition whereby participating journalists leverage openly accessible data to produce data-rich stories.

## STAKEHOLDERS

The open data ecosystem in Rwanda is strongly driven by the government, through NISR, with a few academic institutions and private actors involved.

Surprisingly, the civil society is not as actively involved as their counterparts in Kenya or Sierra Leone. The private sector is a leading stakeholder in the technology industry in Rwanda but not as engaged on data for development.

For this study, the Fellow was able to interview senior managers in charge of data and statistics from the tax authority, the Central Bank as well as the head of data innovations at the National Institute of Statistics Rwanda. From academia, input from the head of the centre of excellence in data sciences at the University of Rwanda and the head of industrial attachment at the African Institute for Mathematical Sciences were also gathered. Here are some of the findings.

## DRIVERS OF OPEN DATA FOR DEVELOPMENT IN RWANDA

### The data revolution policy.

Rwanda's data revolution policy positions data as existential to the country's ambitions to be a digital economy. It's authors describe it as a "*strategic framework for attaining an innovation data-enabled industry for accelerated social economic development*".

The policy's adoption is a sign of significant political will to prioritize data and innovation as key enablers for the economy and achievement of the goals articulated in various national strategic development programs. The existence of a national data revolution steering committee further signals an effort to ensure there is coordinated progress in implementation of the policy and publication of high value datasets by government institutions.

## BARRIERS OF OPEN DATA FOR DEVELOPMENT IN RWANDA

Overall, open data is still a relatively new concept for most public servants who also do not understand its potential returns for institutions if adopted.

Moreover, there is a huge gap in terms of human and physical capital. It's only recently that professional courses in data sciences started being delivered by a few institutions of higher learning. Furthermore, most public institutions have limited infrastructure and still use paper based data management systems.

Although the data revolution policy puts forth some concrete recommendations on how open data can be institutionalised, there are gaps in terms of institutional support rendered to public institutions. For open data to gain traction, there is a need to have a national task force or secretariat tasked to drive the open data agenda. Although the NISR has a good will to continue spearhead open data in Rwanda, they appear to be having many other conflicting priorities.

First, the open data ecosystem is still predominantly driven by the data supply side. Not much is happening from the demand side yet actors such as the civil society, innovators, the private

sector to name but a few can benefit from published data. Second, the governance framework, as set out in the data revolution policy, is yet to be fully functional.

To date, only the national data steering committee was formed and convenes a few times each quarter. Furthermore, individuals in charge of fostering open data within ministry/department/agency are non-existent. As a result, it handicaps the implementation of the policy.

Third, despite their online presence, government ministry/department/agency aren't openly publishing data per the policy guidelines. There seems to be a disconnect between what the policy stipulates and what's happening at various public institution levels.

## RECOMMENDATIONS

To have a balanced open data ecosystem composed of both the demand and the supply side of data would, arguably, permit open data champions to thrive. As such, a bottom-up demand for open data and sustainable feedback loops for improved quality, accessibility and use of open data for development would be bolstered.

Particularly for Rwanda, more work needs to go into raising awareness about open data by bringing together all stakeholders. By setting up such platforms, it will allow them to identify open data champions/actors and rally them around joint events and activities hence continue to jointly develop products and solutions underpinned by open data.



# CASE STUDY: SIERRA LEONE

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Sierra Leone's development agenda is currently spelled out in its Medium-Term National Development Plan 2019-2023[65]. The plan prioritizes human capital development, economic diversification, governance and accountability for results, infrastructure and economic competitiveness. The success of this national strategy is predicated on a comprehensive monitoring, evaluation, and learning framework as a means of implementation. It acknowledges a growing awareness, especially at the national level, of the need for better data for evidence-based planning and to understand socio-economic development challenges, prioritize and monitor progress on achievements. The macro and micro data required is generated by the National Statistical System which constitutes Statistics Sierra Leone, government MDAs and local councils, non-governmental organizations, private firms, and universities. The NSS is coordinated by Statistics Sierra Leone, the national statistics office mandated to collect, process and disseminate official statistics and seeks to strengthen the availability of data information and statistics to catalyze evidence-based decision-making processes.

Development data is therefore a key tenet of the development blueprint in Sierra Leone. There is a need for data that informs policy and interventions by government and other stakeholders especially for a country that has experienced economic shocks in the recent past. The collapse of iron ore prices in the international market and Ebola Virus Disease (EVD) significantly impacted Sierra Leone's socio-economic development trajectory[66]. Availability of quality, reli-

[65] Sierra Leone's Medium-Term NAtional Development Plan 2019-2023 http://www.moped.gov.sl/wp-content/uploads/2019/03/Medium-Term-National-Development-Plan-Volume-I.pdf
[66]National Strategy for the Development of Statistics (NSDS)- Operationalisation of the National Statistical System 2016-2020 https://www.statistics.sl/images/StatisticsSL/Documents/NSDS/Statistics%20Sierra%20Leone%20NSDS_2016-2020_Full%20Document.pdf

able and timely data is therefore critical in understanding and responding to the emerging socio-economic development challenges.

## OPEN DATA FOR DEVELOPMENT IN SIERRA LEONE

Efforts to open up data in Sierra Leone started in 2008, when the government established the Open Government Initiative (OGI) to respond to the objectives of the government to enhance government accountability and participatory decision-making[67]. In 2013, the Right to Access Information Act[68] was passed. This law provides the legal anchorage for the implementation of open data in Sierra Leone. It was passed as part of the government's response to improve transparency across government by making information readily available and accessible to its citizens. Open data provides a means for the government to achieve this by pro-actively sharing the data collected by the government institutions. In the subsequent years, there has been significant progress with the launch of the Sierra Leone Open Data Portal (opendatasl.gov.sl) in 2015[69] and its relaunch in 2017. The portal was set up to increase transparency, create economic value from data, and facilitate data-driven policy-making.

## STAKEHOLDERS

The data for development ecosystem in Sierra Leone is largely dominated by government MDAs. The National Statistical System is coordinated by Statistics Sierra Leone and brings together government MDAs and local councils, non-governmental organizations, private firms, and universities[70].

### Stakeholder Roles

Statistics Sierra Leone is integral to the data for development ecosystem in Sierra Leone. It is mandated to collect, process and disseminate official statistics and seeks to strengthen the availability of data information and statistics to catalyze evidence-based decision-making processes. It conducts surveys and collects data and information from both the public and private sector.

The Right to Access Information Commission (RAIC) is mandated to promote proactive disclosure of information and enforce measures to promote openness[71]. The RAIC has embarked on this by forging partnerships with major stakeholders including government institutions, national, and international partners. As a result, a multi-stakeholder council has been established to facilitate and monitor compliance of all public institutions to disclosure of information in a proactive manner. The Open Government Initiative (OGI) is a department of the Government of Sierra Leone. Its role is to ensure transparency, accountability and civic participation in governance processes.

This Ministry of Information and Communication is the ministry in charge of all things relating to communication and access to information. The Right to Access Information Commission is under this ministry, and it oversees the work done by the commission.

The Anti-Corruption Commission serves as the enforcer of the Right to Access Information Act, 2013. The role of this commission within the data for development is to provide a platform for legal redress when citizens rights as enshrined in the law are infringed upon.

The Directorate of Science Technology & Innovation is a new Government department that is committed to digitizing systems in Sierra Leone. It is also exploring new ways of increasing data availability.

Development partners such as the World Bank, the IMF, GPSDD and PARIS21[72] have played an integral role in financing initiatives as well as supporting data and statistical guidelines/roadmaps for Sierra Leone.

## DRIVERS OF OPEN DATA FOR DEVELOPMENT IN SIERRA LEONE

The following were identified enabling factors for the use and publication of (open)data for development in Sierra Leone:

### Government support for open data for development initiatives

There has been significant political good will from current and previous governments in the implementation of open data for development and access to information initiatives. In addition

[67] Open Data Readiness Assessment https://opendatatoolkit.worldbank.org/docs/odra/odra_sierra_leone.pdf
[68]The Right to Access Information Act, 2013 https://www.carl-sl.org/pres/the-right-to-access-information-act-2013-what-apprehensions-for-implementation
[69]Ibid
[70]iBid
[71]Right to Access Information Commission - Sierra Leone http://www.data4sdgs.org/partner/right-access-information-commission-sierra-leone
[72]Shaping the SDG Data Revolution Roadmap in Sierra Leone https://paris21.org/news-center/news/shaping-sdg-data-revolution-roadmap-sierra-leone

to the passing of the Right to Access Information Act, 2013 and the launch of the open data portal, multiple other efforts have been made to create an enabling environment for the implementation of (open) data for development initiatives. Among these are joining the Extractives Industries Transparency Initiative (EITI) through the Sierra Leone Extractives Industries Transparency Initiative (SLEITI) in 2008. EITI is the global standard to promote the open and accountable management of extractive resources which requires countries to disclose information to the extractive industry value chain actors including extraction, revenues and how they benefit the public.

Sierra Leone also joined the Open Government Partnership (OGP), a voluntary international partnership that brings together government leaders and civil society advocates to promote accountable, responsive and inclusive governance with the intention of fostering a culture of open governance. Through commitments made in OGP National Action Plans, Sierra Leone has made steps to strengthen the implementation of the Access to Information Law and opening up more of its public procurement processes. In addition Sierra Leone adopted the Open Data Charter in September 2016 which aims to instil a culture of open and responsible data use for development in governments and its citizens.

Through this adoption, Sierra Leone sought to mainstream the charter into its Data Revolution Road Map for sustainable development[73]. These efforts demonstrate Sierra Leone's efforts and commitment towards mainstreaming the use of open data to inform the country's development agenda across different sectors.

### The proliferation of new technologies

New information technologies have made the mass dissemination of information to citizens easier. With the recent availability of 3G and 4G LTE technology, data can be accessed faster and easier at the convenience of users.

### Tracking progress on global and regional goals

There is a heightened need to monitor progress made in the implementation of the Sustainable Development Goals and Africa's Agenda 2063. This can only be done when data is available and as such reporting provides an incentive for more data collection.

### Existing advocacy efforts

The Right to Access information Commission has carried out multiple outreaches to raise awareness on the Right to Access Information Act, 2013 in a bid to get citizens informed on their right to government information and promote proactive disclosure of data and information.

## BARRIERS OF OPEN DATA FOR DEVELOPMENT IN SIERRA LEONE

The following were identified as challenges impeding the effective implementation of (open) data for development initiatives in Sierra Leone:

### Lack of coordination between stakeholders implementing open data for development initiatives.

For government institutions, there is no consolidated inventory defining sources of data and where to access it from. In most cases there are bits and pieces across different institution websites making it difficult for potential users to find what they are looking for.

### Week legal and policy frameworks

There are weaknesses in the legal and policy framework supporting the implementation of open data for development initiatives. Key instruments in the implementation of (open) data for development in Sierra Leone include The Constitution of Sierra Leone 1991[74], The Right to Access Information Act 2013, The Statistics Act 2002[75], The Telecommunications Act 2006[76], National ICT Policy 2009, Draft National ICT Policy 2012[77], National Cyber Security Policy 2016-2020, Records and Archives Management Bill and The Copyright Act 2011[78]. While these laws

[73]Adoption of the International Open Data Charter https://drive.google.com/file/d/0B4Y3ULAeZvHcTmkwVDBycjRLRFU/view

[74]The Constitution of Sierra Leone 1991 http://www.sierra-leone.org/Laws/constitution1991.pdf
[75]The Statistics Act 2002 http://www.sierra-leone.org/Laws/2002-13.pdf
[76]The Telecommunications Act 2006http://www.sierra-leone.org/Laws/2006-9s.pdf
[77]Draft National ICT Policy 2012http://mic.gov.sl/Portals/0/SL_National_ICT_Policy.pdf
[78]The Copyright Act 2011 http://parliament.gov.sl/dnn5/LinkClick.aspx?fileticket=uSwZwft91rs%3D&tabid=79&mid=438

and policies provide a foundation, there still are gaps and inconsistencies that make it difficult for sustainable (open) data for development initiatives to be implemented. These are;

### Right to Access Information Act 2013

There is no provision for the training and education of public officials with regards to the rights of individuals to access information. To effectively ensure that the provisions of this Act are properly followed and adhered to, public servants in all government institutions and at all levels of governance need to be adequately trained on their obligations under the Act. For example, with regard to the exemption clauses, to avoid misuse of the said clauses and to prevent any tendency of Information Officers to reject applications on improper grounds, Public officials must be fully aware that this act imposes on them a duty to make information available.

Secondly, The Act bares no legal dominion over the private sector. The Short Title of the Act describes it as "*…an Act to provide for the disclosure of information held by public authorities or by persons providing services for them….*" Thus there is no specific provision for the private sector even though the private sector deals with citizen information on a daily basis as in the case of telecommunication companies. The Act does not guarantee access to information held by the private sector, unless it is voluntarily offered. There is also a gap on what should happen when there is a partnership between government MDAs and private sector institutions such as banks. This limitation has far-reaching ramifications especially in light of increased public-private partnerships with a considerable amount of government business transacted between the public and private institutions. It is therefore essential that the law also includes the private sector. This loophole creates a grey area that can limit citizen's access to data and information.

Section 11 of the Right to Access Information Act 2013 deals with other proactive obligations. Outlined in this section is the data and information that is mandated by law to be published by MDA's in Sierra Leone. Thus by this section MDA's are made aware that they have a legal obligation to make certain information and data available to the public. What is lacking however is a clear provision for enforcement of the provisions of this act for defaulting MDA's.

Part 3 of the Act, from section 12-24 deals with information that is exempted from disclosure. There are too many categories of information that have been exempted by the Act from disclosure to the public that may not be sensitive or pose any risk. Categories such as; Exempt Information, Refusal of Request, Information Accessible by other means, International Relations, Economic Interests, Investigations and Law Enforcement, Third party information, Commercial Interests and Public Economic Interests can be subjected to a review to determine whether or not they should be exempted. These categories as currently conceptualized are too wide and can impede access to information.

There is no proper pathway to the harmonization of the Right to Access Information Act 2013, with other acts that may be relevant to its proper implementation within the Public Sector. A lot of conflicts remain as of now between the Right to Access Information Act 2013 and other Civil service related legislation. As such, there is no uniform legal framework in which to address access to information and the management and publication of (open)data. This fragmented approach presents inconsistencies that impede publication and access of (open) data..

Finally, there is no provision for the protection of the identity and life of whistle-blowers. As such, very few people, if any at all, may be willing to report or release information that the public has the right to access, for fear of persecution.

### The Statistics Act 2002

The Statistics Act of 2002 covers the Mandate of Statistics Sierra Leone. The main job of Statistics Sierra Leone is to collect data on individuals, households, businesses, etc. This Act has a gap as there is no accreditation policy for official statistics in Sierra Leone resulting in different government MDAs publishing different data and statistics on the same indicator.

### The Telecommunications Act 2006

The Telecommunications Act of 2006 established the National Telecommunications Commission (NATCOM) under the Ministry of Information and Communications. The mandate of this Commission is to establish regulations to protect data. Section 9.2 states that the Commission is to "*safeguard the secrecy of telecommunications and the protection of personal data in collaboration with the telecommunications network operators.*" However, there is still no Data Protection Bill and the absence of such relevant legislation remains a major gap.

### National ICT Policy 2009:

This Policy also firmly recommends the proper formation of a legal framework with regards to telecommunications, broadcasting and information technologies. This policy looks at the Telecommunications Act of 2006 with recommendations for the subsequent Telecommunications

(Amendment) Act 2009. There is, however, no clear timeline wherein the objectives are to be achieved. Thus up to now, some of these recommendations are yet to be implemented.

### The Copyright Act 2011

This Act defines the ownership of a government work. According to Section 8 (a-b), it states that copyright of works that are made by or under the direction of the Government is vested in the President. Under Section 7(a), it is stated that copyright protection does not extend to "*mere data*".It is therefore unclear about the government's ownership of raw data or the process for which the government would permit the use of such data which presents ambiguities.

### Inadequate financing for the National Statistical System.

The government dedicated budget line does not meet the set out budget[79] and the deficit is supplemented by development partner funding which is not guaranteed. This then goes on to impact the availability of human capital, physical and technical infrastructure to deliver on the NSS' mandate.

### Lack of Awareness

Another barrier to the publication and use of open data for development is the lack of awareness among the populace about their rights to access information and data held by the government. Most citizens, who are potential users of published data, are unaware of the existence of the Right to Access Information Act 2013, and their rights as enshrined in the Act. This has negatively impacted potential uptake and use of already published data.

## RECOMMENDATIONS

The following areas can be addressed to create an enabling environment for the effective implementation of open data for development initiatives in Sierra Leone. These include:

### Better coordination among stakeholders for better data access.

Access to available data is currently unstructured and this impedes access. Stakeholders should therefore collaborate to develop data inventories that help locate datasets. Data inventories pointing to datasets on other websites simplifies searches as opposed to relying on search engines. The government can set up its own inventories for government data and other stakeholders can collaborate to set up repositories with inventories for collected data. Going forward it is also important to explore potential incentives for data sharing especially among non-state actors.

### Harmonizing and strengthening the legal and policy framework.

The current legal and policy framework supporting the implementation of open data for development initiatives has inconsistencies and gaps that could be exploited to impede publication and use of data. It is therefore important to have a thorough legal analysis and have these laws and policies harmonised to support an enabling environment for the use and publication of data. This would also include streamlining the institutional framework that oversees the implementation of the different laws and policies.

### Consistent funding

Financing of the key institutions in the NSS and exploring sustainable funding models to ensure the NSS is adequately resourced to deliver on its mandate is critical.

### Expanding reach for awareness creation initiatives.

Since its inception, the Right to Access Information Commission embarked on nationwide awareness raising campaigns in order to boost awareness on access to information and the use of open data development. More investments need to be made to expand the reach of this efforts and foster collaboration with other government MDAs to raise awareness on the use of data for development across different sectors.

[79]National Strategy for the Development of Statistics (NSDS)- of the National Statistical System 2016-2020 https://www.statistics.sl/images/StatisticsSL/Documents/NSDS/Statistics%20Sierra%20Leone%20NSDS_2016-2020_Full%20Document.pdf

While there are different contexts across the African continent, the key drivers and barriers of data for development are quite similar, only manifesting themselves in different ways across the different contexts

# CONCLUSION

There is growing interest and investment in data for development initiatives across the African continent. Data provides a foundation for evidence-informed policy making and implementation, efficient resource allocation, increased innovation and public service delivery.

The use of open data for development on the other hand provides additional benefits since data is published in formats that enable better access and use by the general public. While open data may be preferred, the use of data for sustainable socio-economic development in Africa includes the use of closed data. Additionally, open data is still a relatively new concept with fragmented initiatives across the African continent. It may take time to begin observing benefits on a larger scale. As the understanding, publication and use of open data for development continues to improve, the benefits could be self-reinforcing: they will increase as individuals perceive the advantages and help to improve the accuracy and detail of the information available[80] and as such could presumably get better with time. Stakeholders should therefore continue to invest in different aspects such as advocacy, training, infrastructure, capacities and or policy dialogues if meaningful benefits are to be reaped.

Multiple enabling factors continue to support the implementation of data for development initiatives even in instances where there are multiple challenges stifling their successes. While there are different contexts across the African continent, the key drivers and barriers of data for development are quite similar, only manifesting themselves in different ways across the different contexts.

Suggested solutions include strengthening sustainable financing for open data financing, building capacity for production and use of  open data beyond traditional conceptualizations

[80]Open data: Unlocking innovation and performance with liquid information https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/open-data-unlocking-innovation-and-performance-with-liquid-information

of the statistical systems and strategic collaborations between partners thereby presenting an opportunity for continental, national and sub-national stakeholders to collaborate and address them. The true impact of data for development is yet to be fully understood because of the lack of in-depth impact studies. There is also a need to conduct in-depth impact studies to determine the value of investments that have been made on data for development initiatives in Africa.

It is also important to note that at sector level, the publication and use of data across the continent looks very different. Some sectors such as agriculture and health have seen heavy investments over the years while some are still lacking. It is therefore important to factor in these nuances in the implementation of any interventions in the form of financial investment, type of capacity building, the legal and policy environments, type of investment in technology among other things.

Further, as discourses on data for development in Africa continue to embrace the idea of the data revolution, it is important to acknowledge that the key tenets of the revolution will change data ecosystems as traditionally conceptualized and that countries need to adapt to this. The data revolution also needs to be adapted to the different socio-economic contexts across different African countries. Countries are not similar and stakeholders therefore need to implement context specific approaches for effectiveness of initiatives.

Finally, many stakeholders continue to champion for the publication of open data across the continent. The existence of data does not on its own guarantee improved development outcomes. There is still a lot to be done to build data ecosystems that collect and publish data that can adequately inform development objectives. Combining this with other enabling factors makes it possible for data to be leveraged for better development outcomes. Answers to what would practically drive better publication and use of open data for development therefore lie in hybrid solutions that combine multiple approaches. These could include incorporating data from new sources and using new technologies, such as Artificial Intelligence and Big Data, to leverage the opportunities provided by the 4th Industrial Revolution (4IR) for inclusive and sustainable socio-economic development across Africa.



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